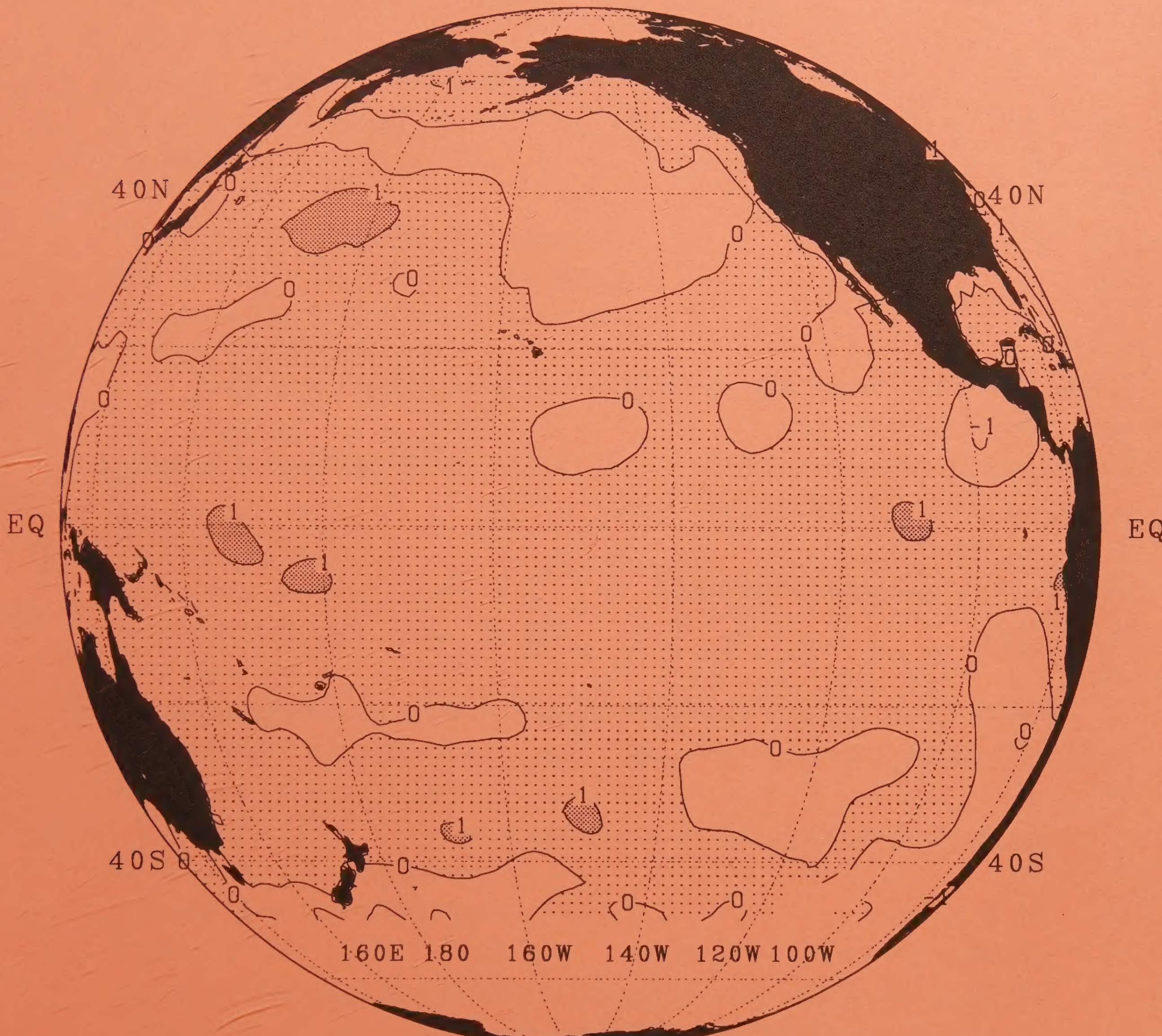
ISSN 1348-5059

# 気象庁海洋月報

# Monthly Ocean Report

## December 2003 (No. 132)




Climate and Marine Department

Japan Meteorological Agency

気象庁 気候・海洋気象部

平成15年12月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
本月報に関する問い合わせは、

〒100-8122 東京都千代田区大手町１-３-４ 気象庁 気候・海洋気象部 海洋気象情報室まで。
電 話 (03) 3212-8341 (内線 5127、5166)
ＦＡＸ (03) 3211-3047
電子メール ocean@climar.kishou.go.jp

Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

Correspondence relating to this report may be directed to :

Yo Nyomura
Head, Office of Marine Prediction
Climate and Marine Department, Japan Meteorological Agency
1-3-4 Ote-machi, Chiyoda-ku, Tokyo 100-8122 Japan
Facsimile: +81-3-3211-3047
e-mail : ocean@climar.kishou.go.jp

表紙は、2003 年 12 月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for December 2003 in the Pacific Ocean.
Areas of positive anomalies are shaded.

# 目　次

# Table of Contents

# 海況の特徴（２００３年１２月）

## 日本近海の海況

海面水温は、東海沖から四国沖にかけての海域と、南西諸島周辺、北海道の東、及び日本海北部で平年より1℃以上高かった。一方、三陸沖から常磐沖にかけては-1℃を超える負偏差が見られた（第４図）。

黒潮は、月を通じて九州の東で大きく離岸し、四国から紀伊半島にかけて接岸していた。上旬は、東海沖を東に流れ、139°E付近で北東に向きを変えた後、三宅島付近を通過し、房総半島に接岸して流れていた。中旬は、東海沖を東に流れ、八丈島の北を通過した後、140.5°E付近で北に向きを変え、房総半島沖を北東に流れていた。下旬は、東海沖を東北東に流れ、三宅島の北を通過した後、34.5°Nに沿って東に流れていた（第９図）。

## 太平洋の海況

太平洋赤道域の海面水温は、全域で平年より高く、170°E付近と110°W付近では+1℃を超える正偏差が見られた。

北太平洋の海面水温は、ベーリング海と35°N、175°E付近で+1℃を超える正偏差が見られた。一方、50°Nに沿った海域では平年より低く、30°N、150°W付近では-0.5℃を超える負偏差が見られた（第１７図）。

# Highlights December 2003

## Seas adjacent to Japan

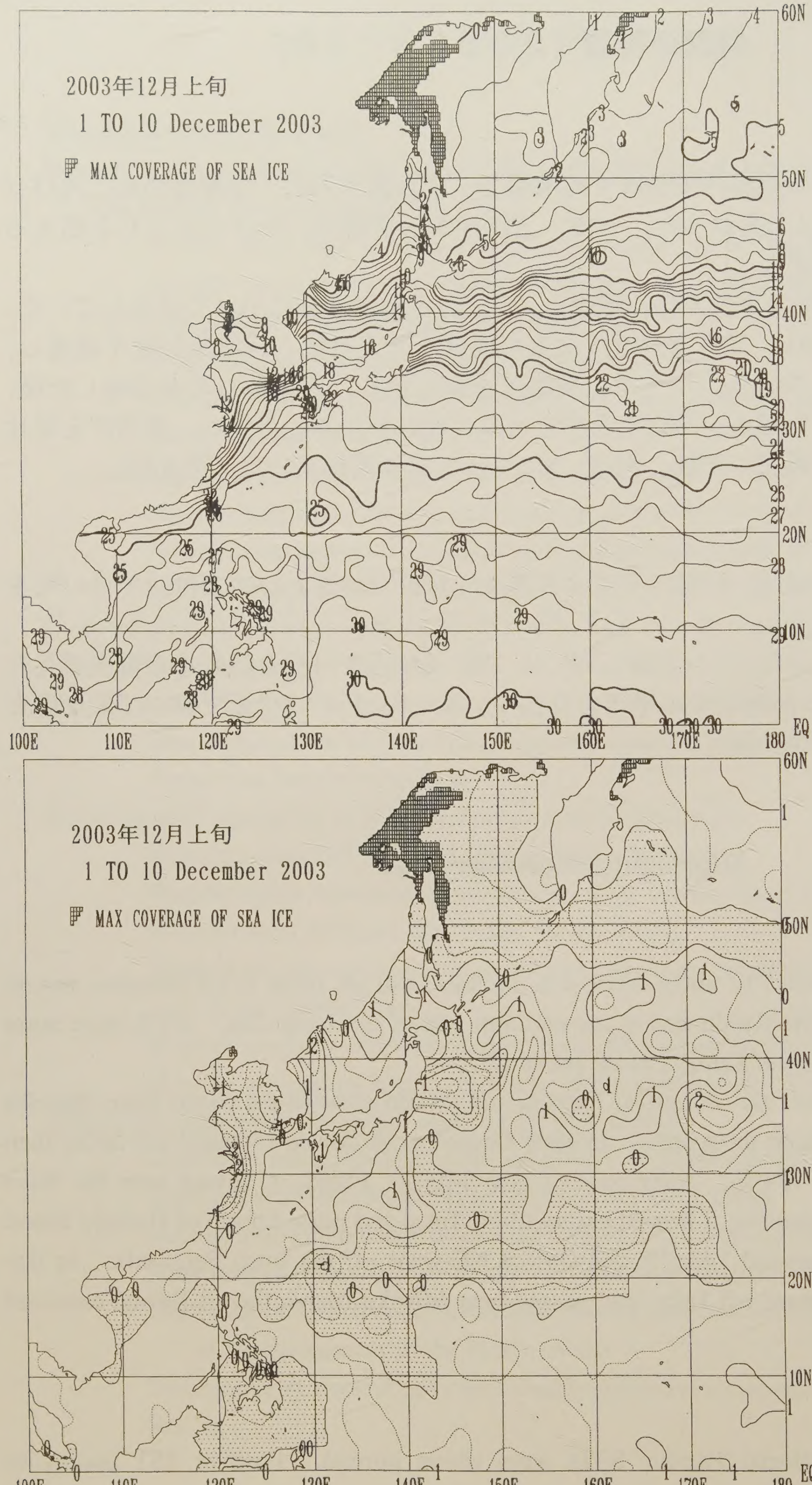
SSTs were more than 1℃ above normal in the seas from off Tokai to off Shikoku, around the Nansei Islands, east of Hokkaido and in the northern part of the Japan Sea. SSTs were more than 1℃ below normal from off Sanriku to off Joban (Fig. 4).

The Kuroshio flowed far off east of Kyushu and flowed close to the coasts from Shikoku to the Kii Peninsula throughout the month. In early December, it flowed eastward off Tokai, then it turned NE-ward around 139°E. After passing near Miyake Island, it flowed near the Boso Peninsula. In middle December, it flowed eastward off Tokai and passed north of Hachijo Island. Then it turned northward around 140.5°E and flowed NE-ward off the Boso Peninsula. In late December, it flowed ENE-ward off Tokai and passed near Miyake Island, then it flowed eastward along 34.5°N (Fig. 9).

## Pacific Ocean

In the whole equatorial Pacific, SSTs were above normal. Positive SST anomalies exceeding +1℃ were found around 170°E and around 110°W.

In the North Pacific, SSTs were more than 1℃ above normal in the Bering Sea and around 35°N, 175°E. SSTs were below normal along 50°N and negative anomalies exceeding -0.5℃ were found around 30°N, 150°W (Fig. 17).



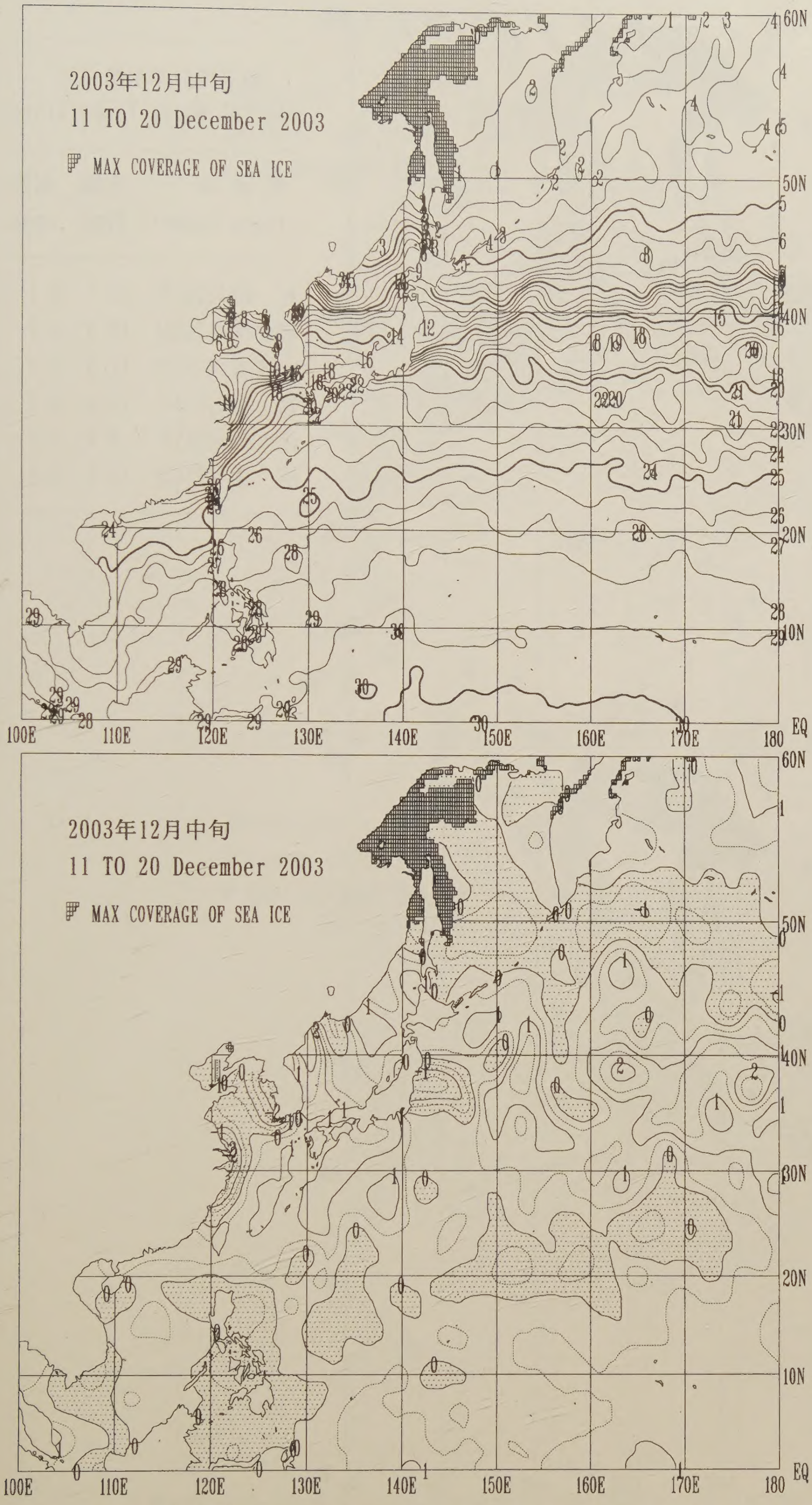

旬平均沿岸水温(℃)
Coastal Water Temperature

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 23.8 | 0.7 |
| 御前崎(47655) | 16.2 | 1.5 |
| 小名浜(47598) | 13.3 | -0.8 |
| 宮　古(47585) | 13.6 | 0.6 |
| 江　差(47428) | 9.9 | 0.6 |
| 浜　田(47755) | 17.4 | 1.3 |

第1図　北西太平洋旬平均海面水温図(上)及び偏差図(下)(2003年12月上旬)

Fig. 1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in December 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies



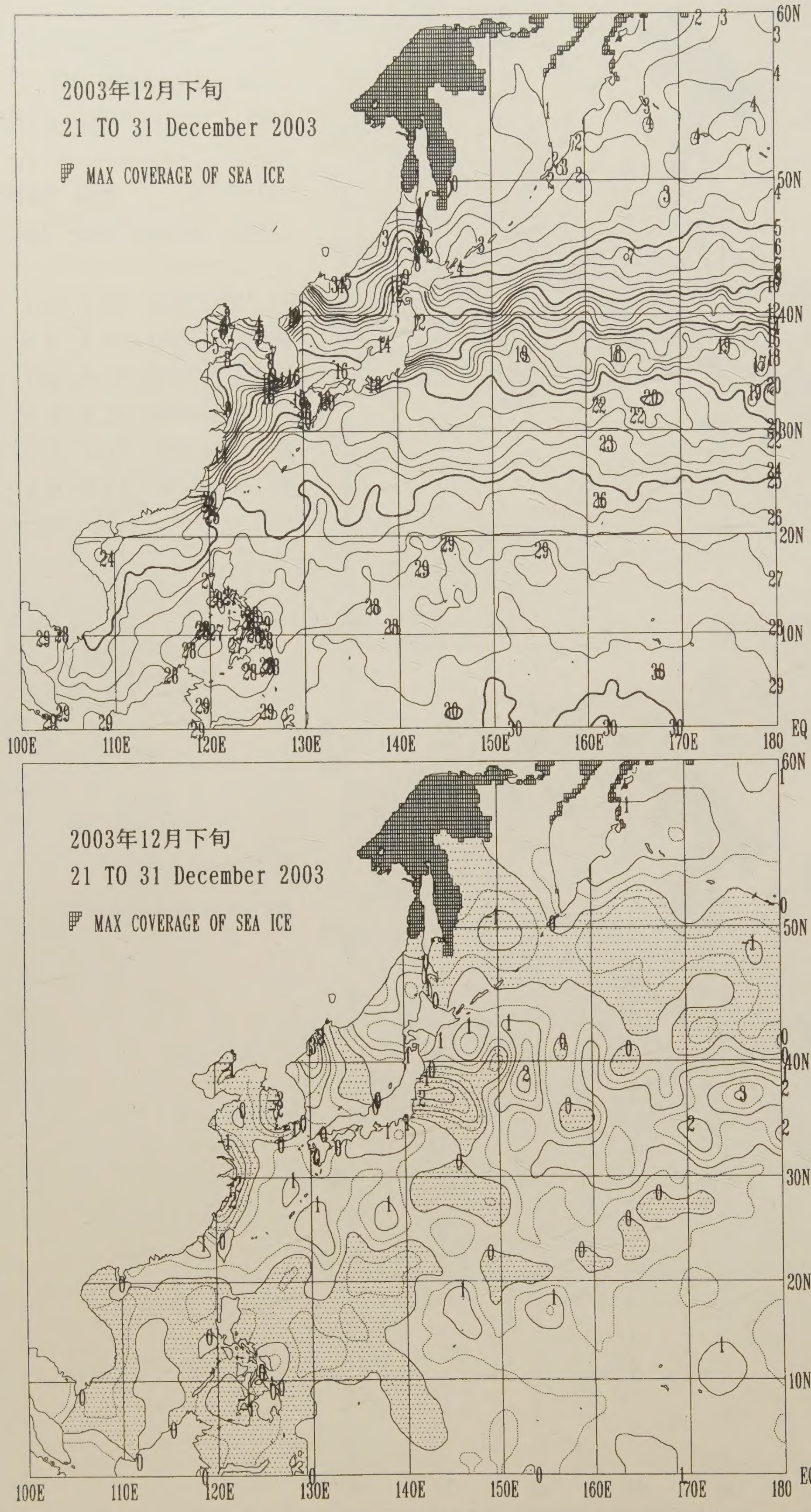

旬平均沿岸水温(℃)

Coastal Water Temperature

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 22.4 | -0.1 |
| 御前崎(47655) | 13.3 | -0.5 |
| 小名浜(47598) | 12.6 | -0.7 |
| 宮　古(47585) | 12.5 | 0.6 |
| 江　差(47428) | 11.2 | 3.1 |
| 浜　田(47755) | 15.2 | 0.1 |

第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2003年12月中旬)

Fig. 2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in December 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

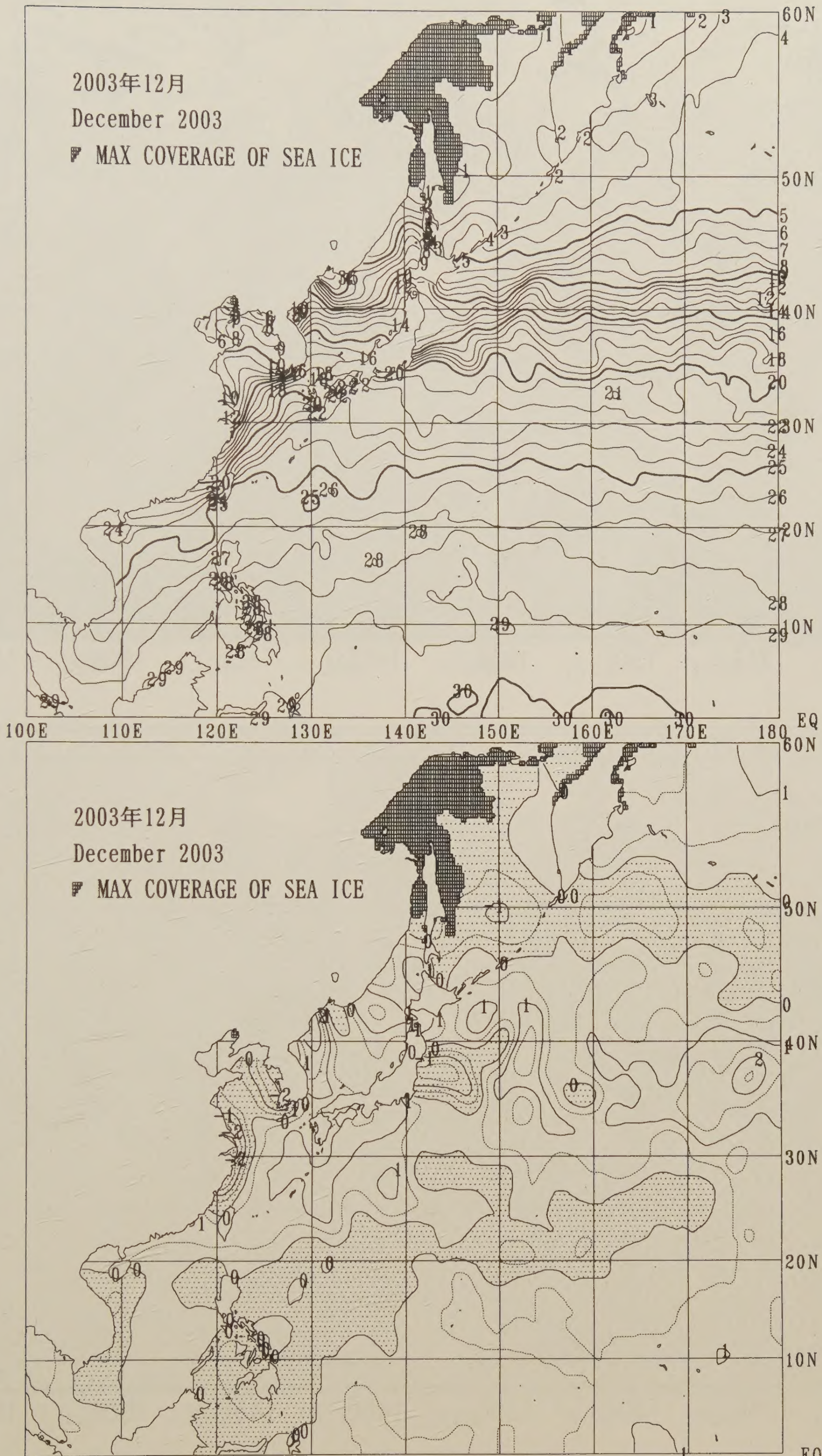



| 旬平均沿岸水温(℃) Coastal Water Temperature | | |
|---|---|---|
| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
| 石　垣(47918) | 22.1 | 0.1 |
| 御前崎(47655) | 13.0 | 0.0 |
| 小名浜(47598) | 11.3 | -1.0 |
| 宮　古(47585) | 11.4 | 0.5 |
| 江　差(47428) | 9.6 | 1.9 |
| 浜　田(47755) | 14.1 | 0.0 |

第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2003年12月下旬)

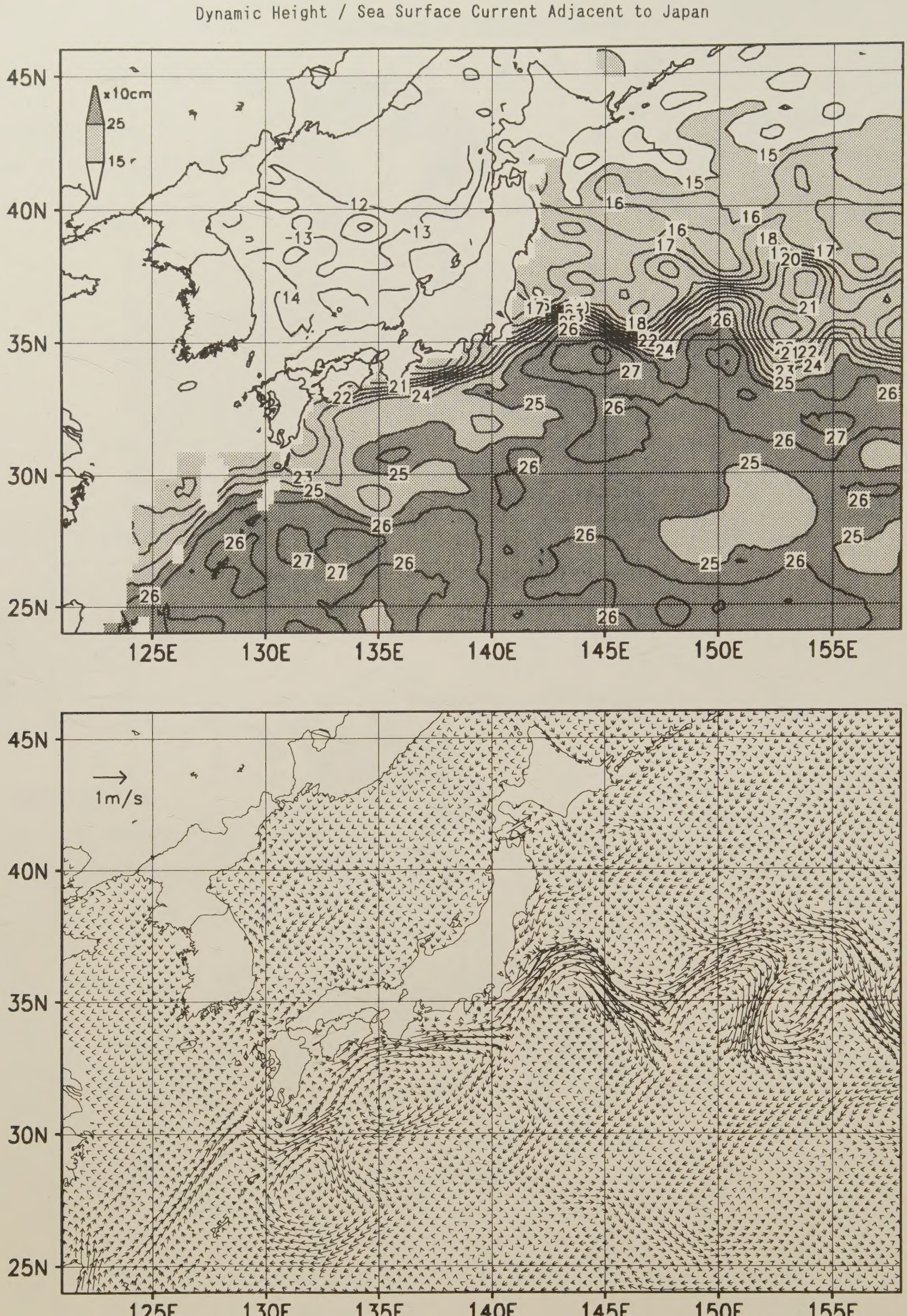
Fig. 3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in December 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Monthly Mean SST & Anomalies



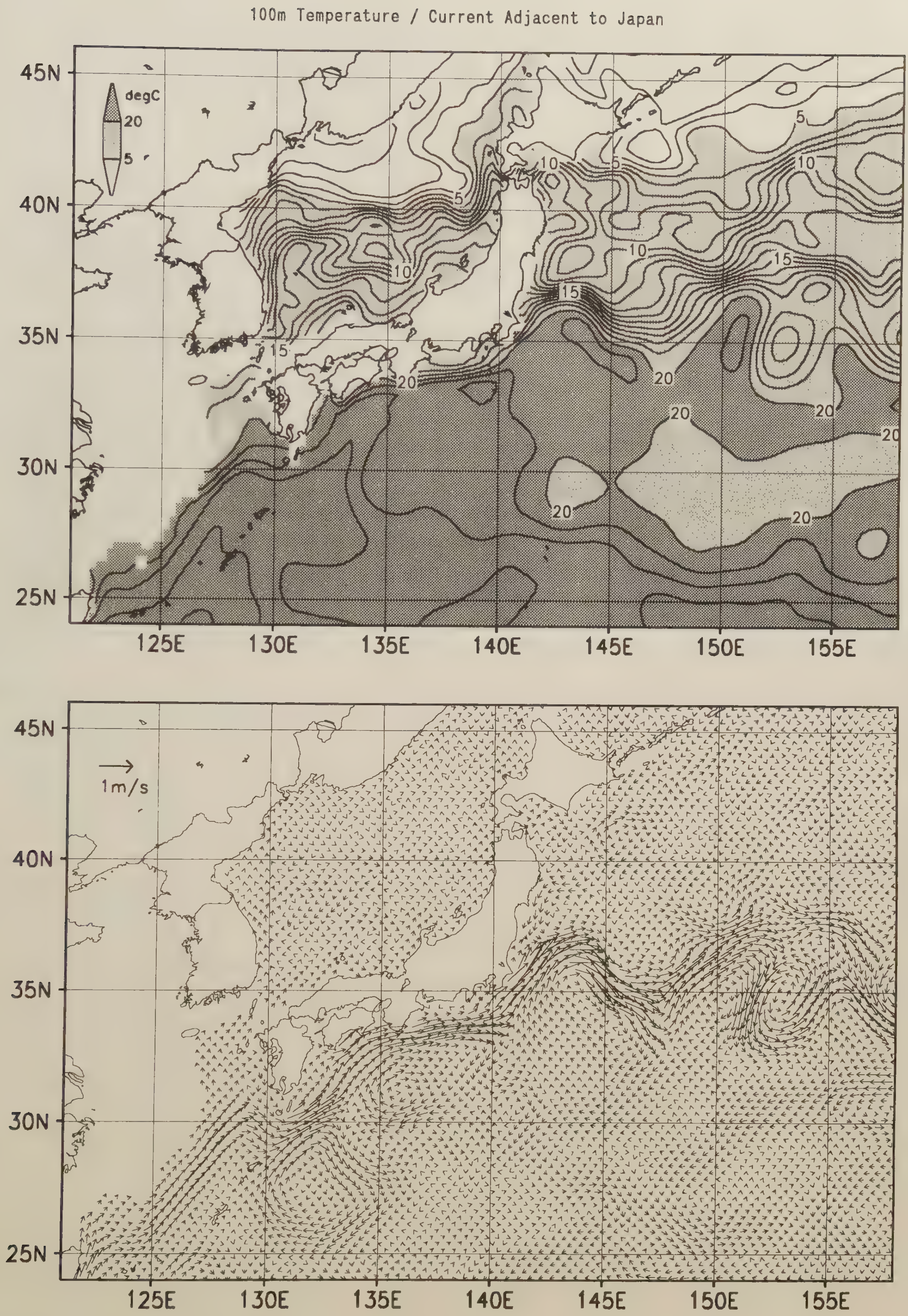

第4図 北西太平洋月平均海面水温図(上)及び偏差図(下) (2003年12月)

Fig. 4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for December 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.




第５図　日本近海月平均海面高度分布図（上）と海面海流図（下）（2003 年 12 月）
（海洋総合解析システムによる）

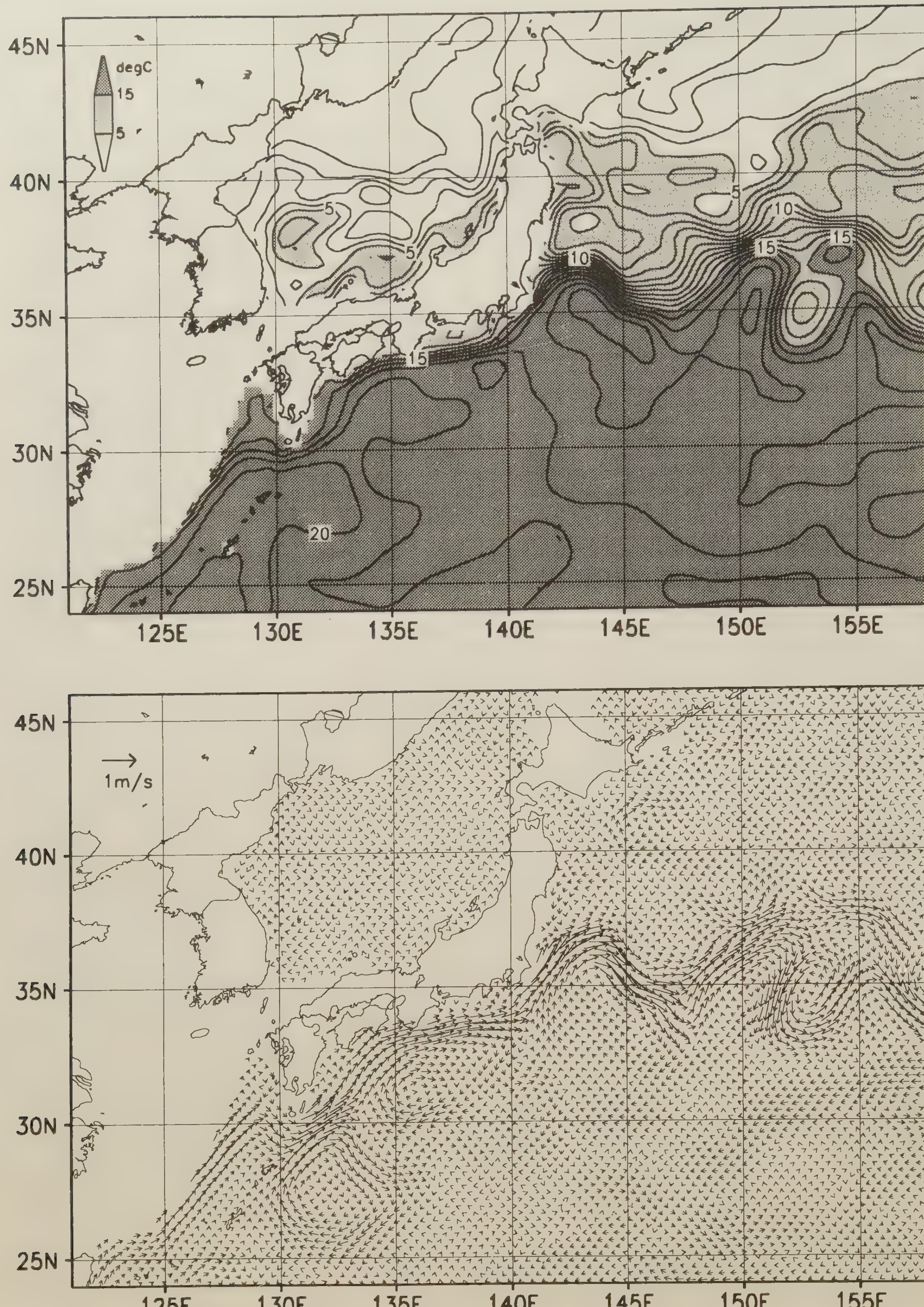
Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for December 2003. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)




第 6 図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 100 m）（2003 年 12 月）
（海洋総合解析システムによる）

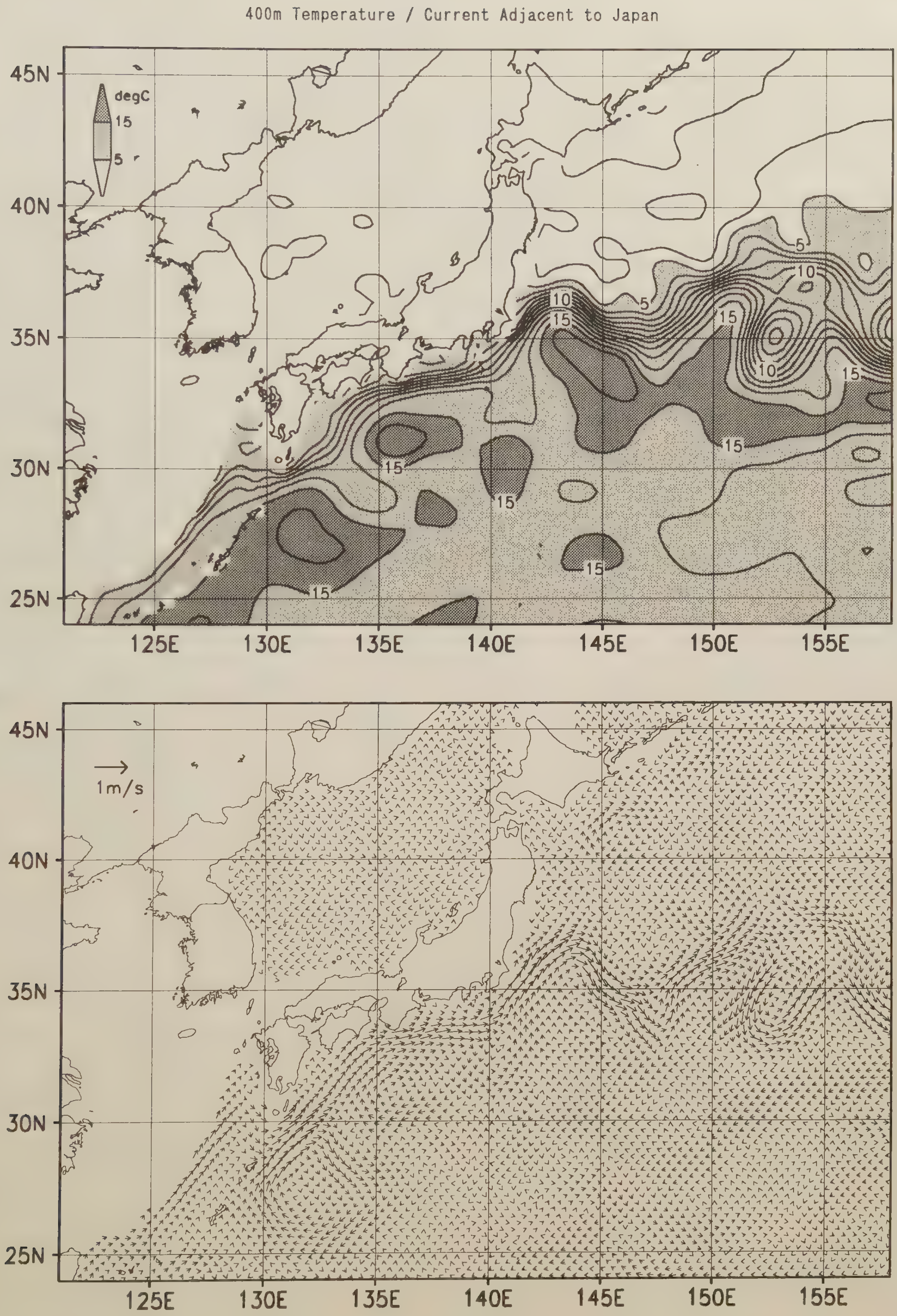
Fig. 6　Monthly mean subsurface (100 m) temperature (top) and current (bottom) in seas adjacent to Japan for December 2003. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)

200m Temperature / Current Adjacent to Japan




第7図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 200 m）（2003 年 12 月）
（海洋総合解析システムによる）

Fig. 7　Monthly mean subsurface (200 m) temperature (top) and current (bottom) in seas adjacent to Japan for December 2003. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)




第 8 図　日本近海月平均表層水温図（上）と表層海流図（下）　（深さ 400 m）（2003 年 12 月）
（海洋総合解析システムによる）

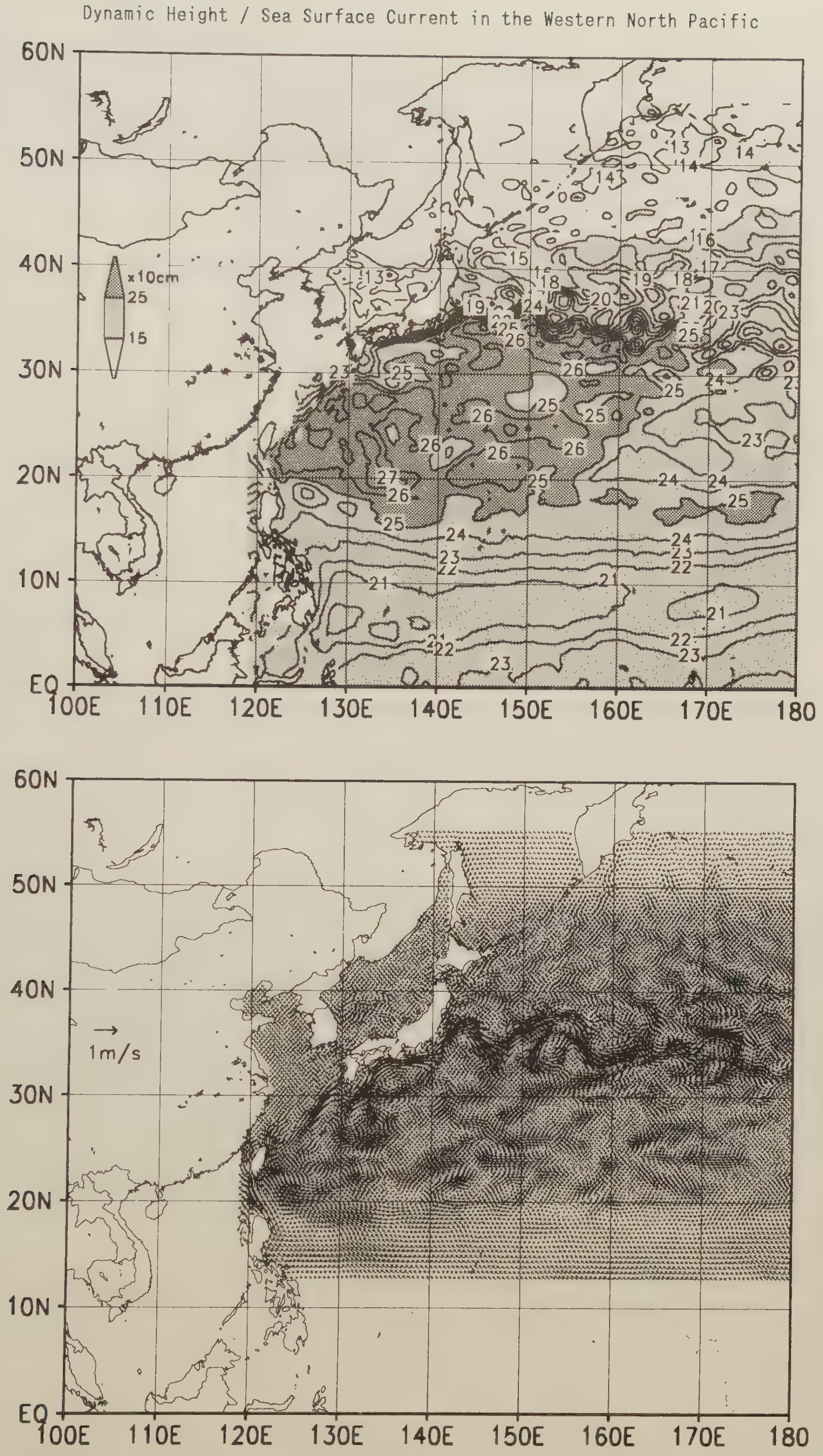
Fig. 8　Monthly mean subsurface (400 m) temperature (top) and current (bottom) in seas adjacent to Japan for December 2003. Contour interval is 1 ˚C (top). (calculated by the Ocean Comprehensive Analysis System)

Location of the Kuroshio axis



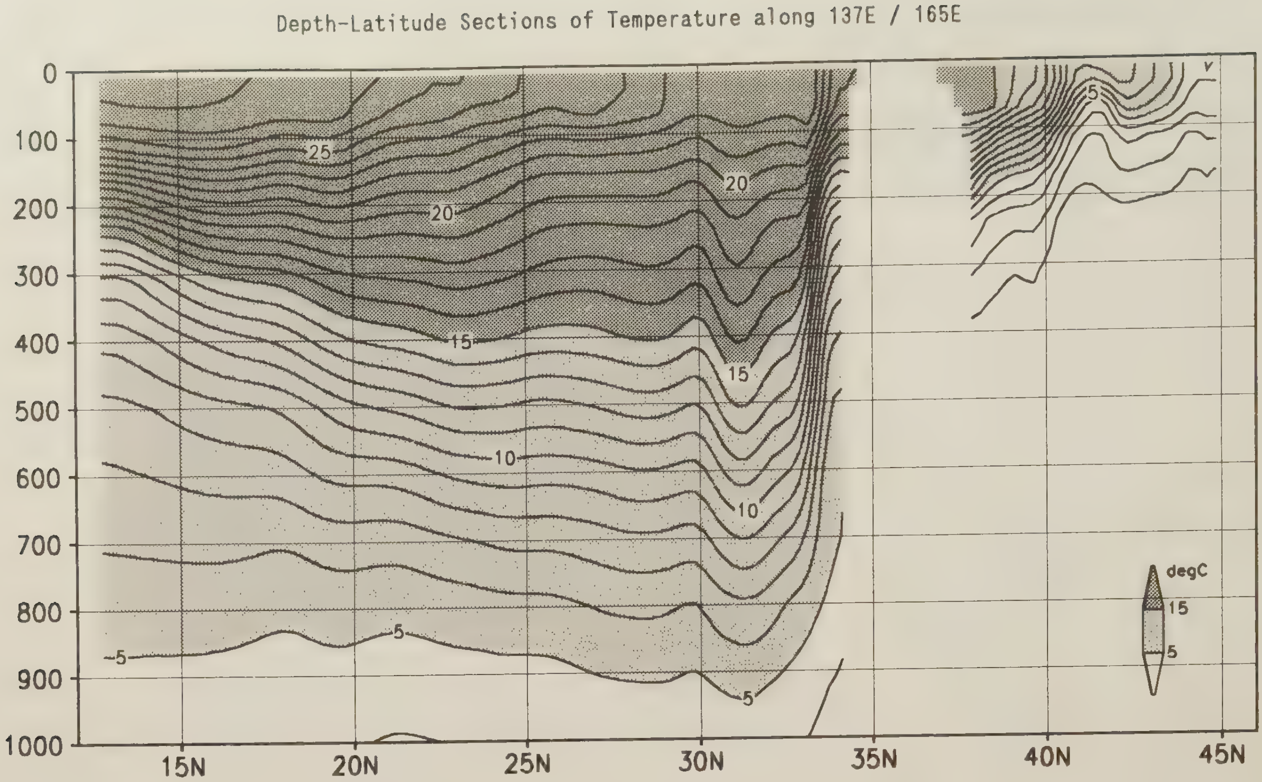

第9図 旬別黒潮流軸図

Fig. 9 Location of the Kuroshio axis



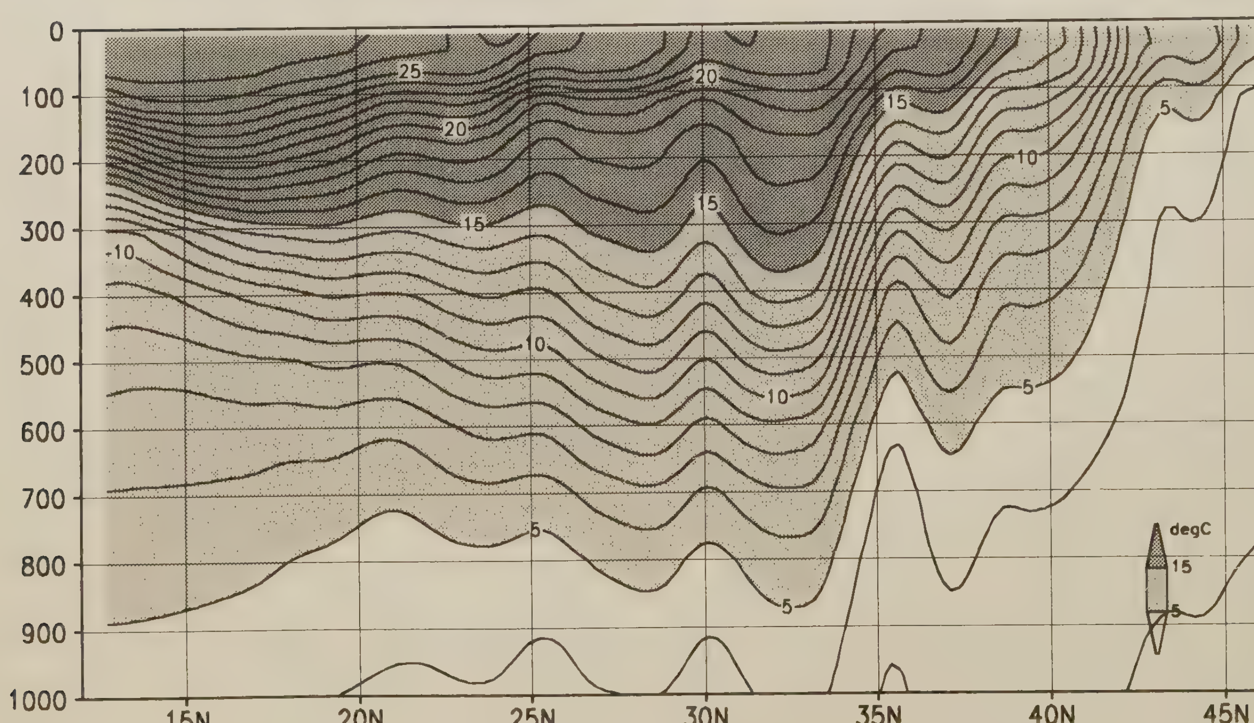

第 10 図　北西太平洋月平均海面高度分布図 (上) と海面海流図 (下) （2003 年 12 月）
（海洋総合解析システムによる）

Fig. 10　Monthly mean sea surface height (top) and current (bottom) in the western North Pacific for December 2003. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)




第11図　東経137°線に沿う月平均表層水温の鉛直断面図（2003年12月）
（海洋総合解析システムによる）

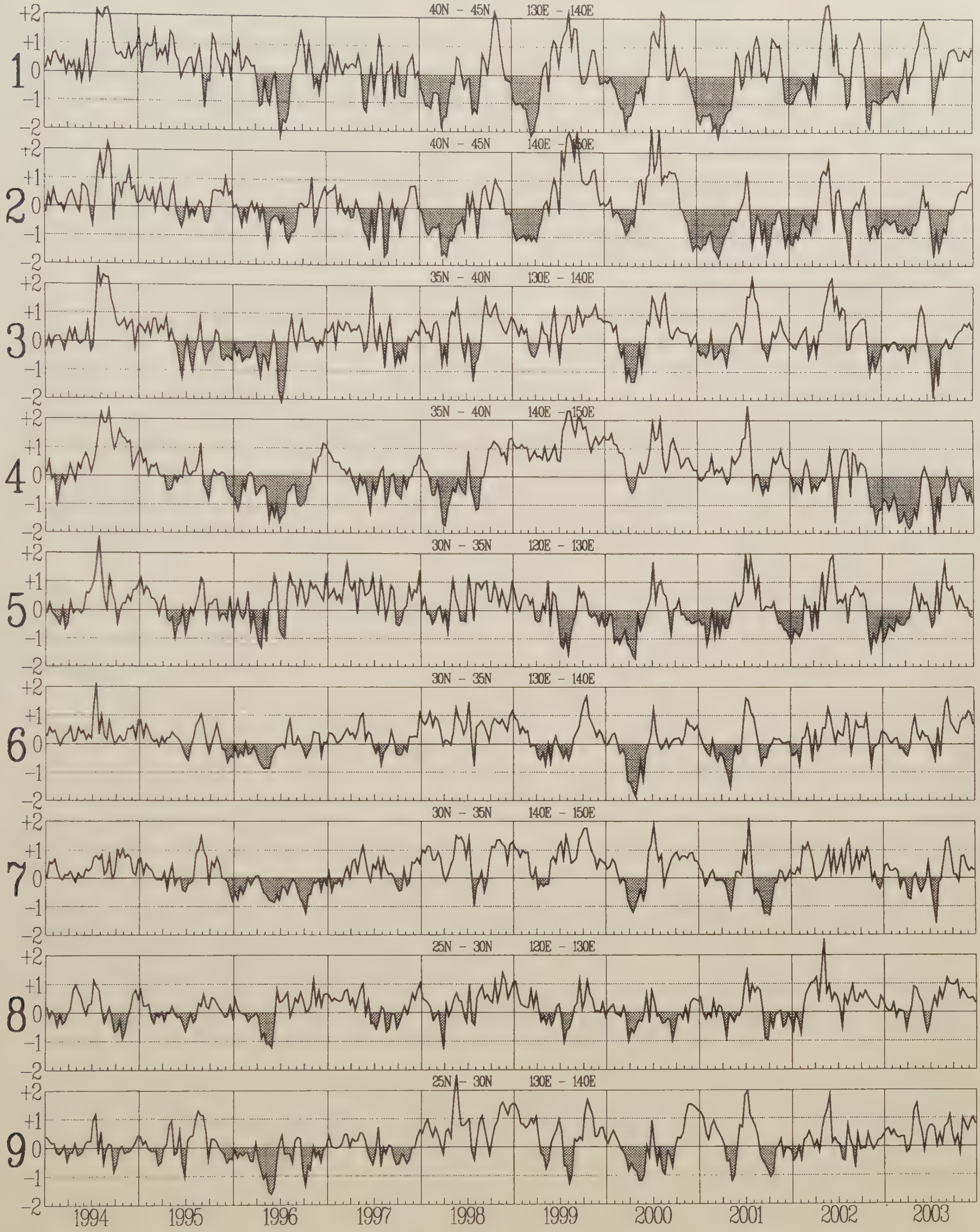
Fig. 11　Vertical cross section of monthly mean temperature along 137 °E for December 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)

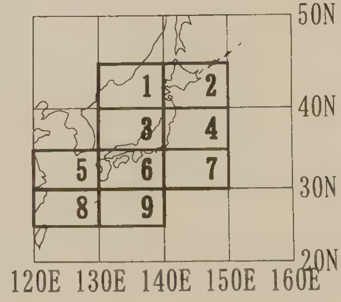



第12図　東経165°線に沿う月平均表層水温の鉛直断面図（2003年12月）
（海洋総合解析システムによる）

Fig. 12　Vertical cross section of monthly mean temperature along 165 °E for December 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)

Time Series of Area Mean SST in the Western North Pacific

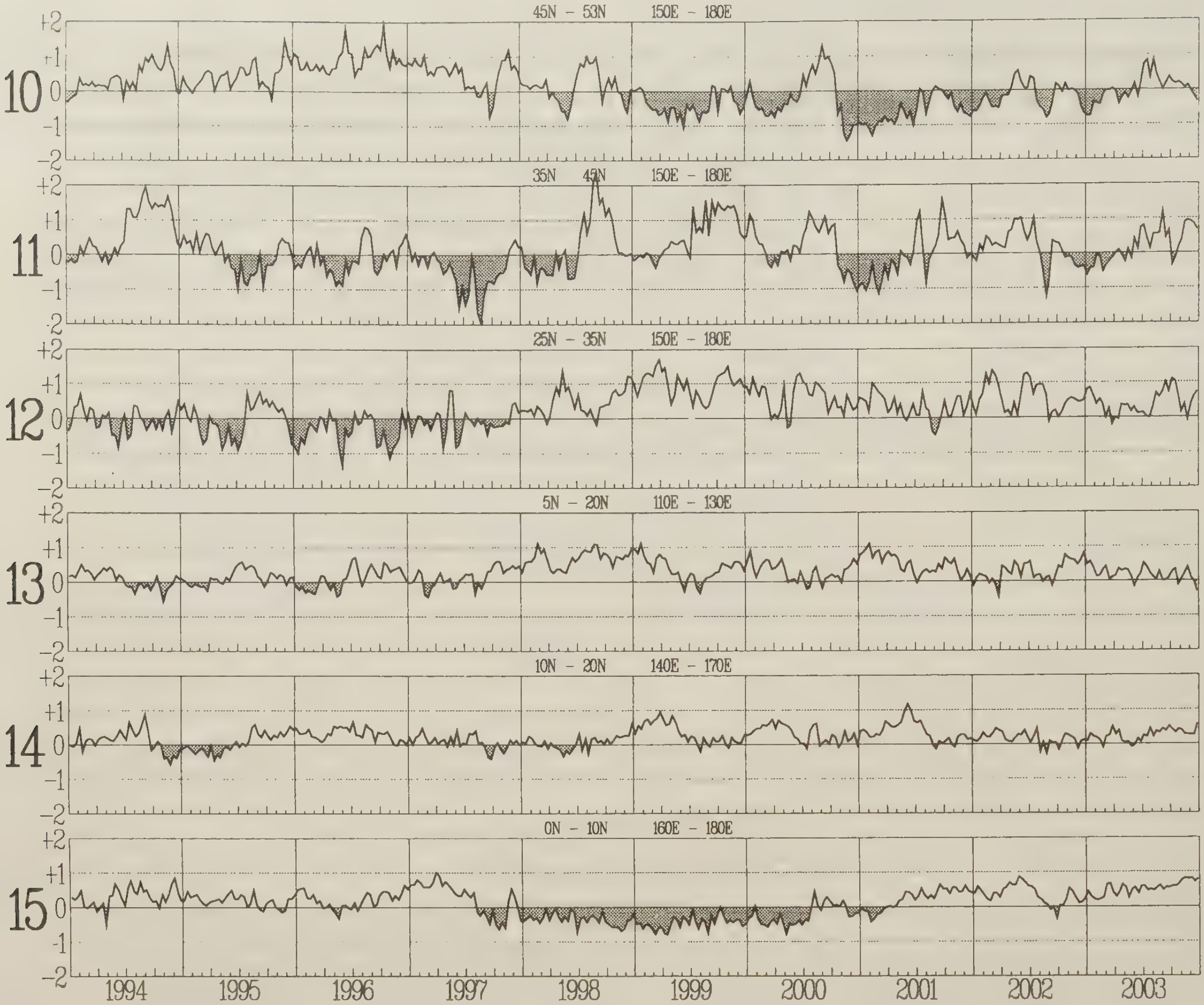



第13図　海域別旬平均海面水温平年偏差時系列図

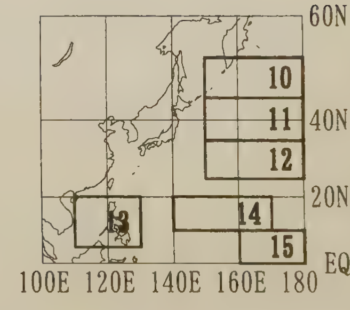
Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

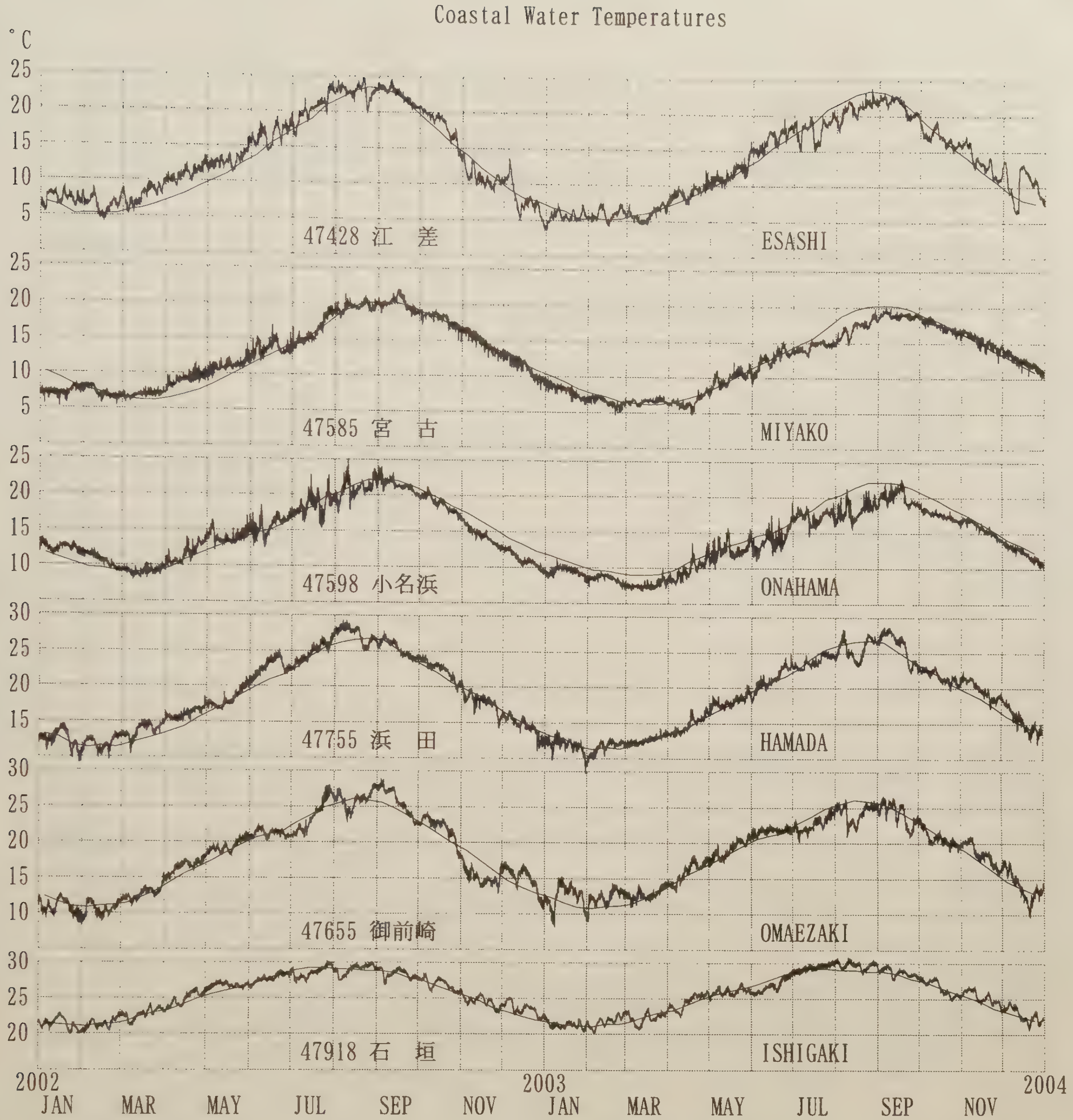
Time Series of Area Mean SST in the Western North Pacific




第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

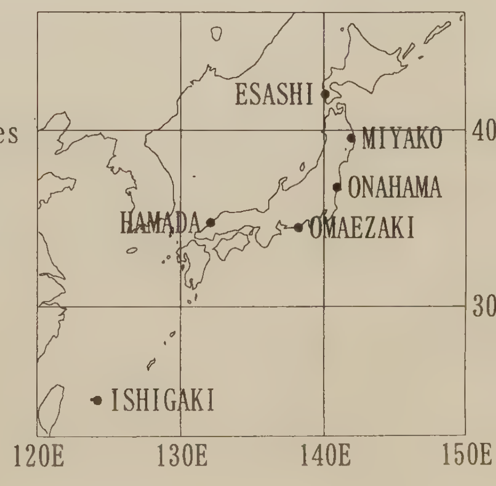
Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

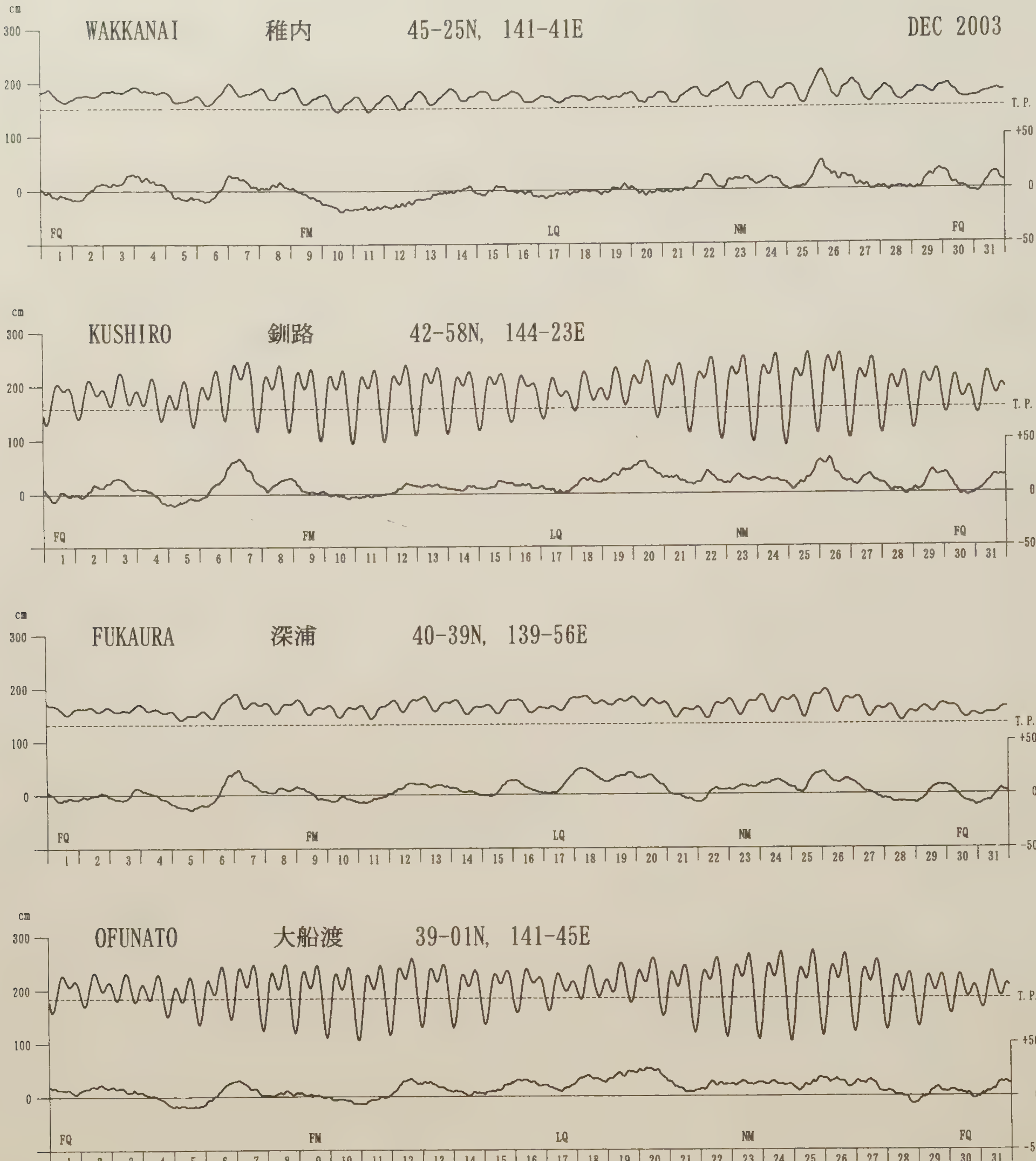


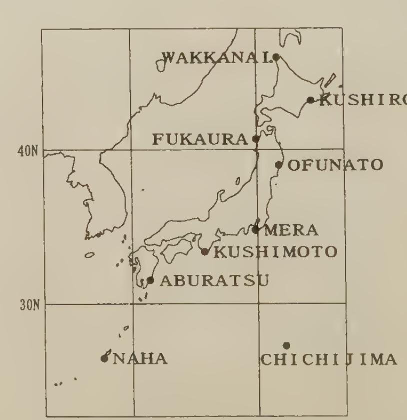



第14図 沿岸水温時系列図

Fig. 14 Time series of hourly coastal water temperatures (°C) measured at 6 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.





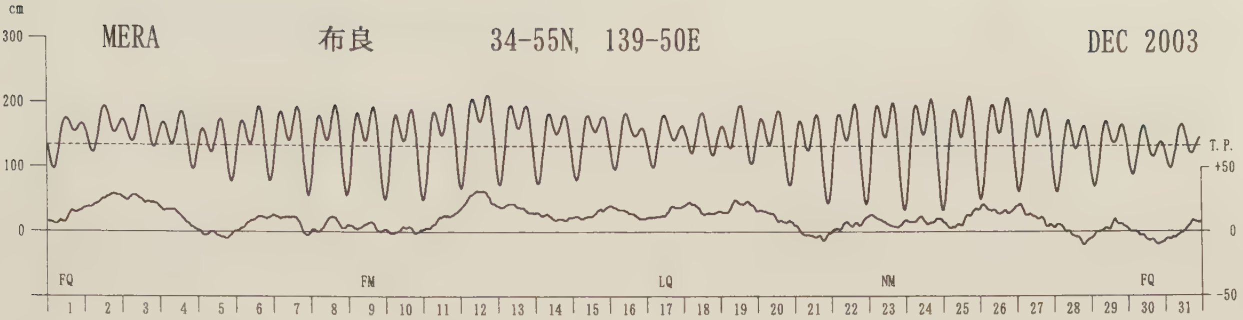



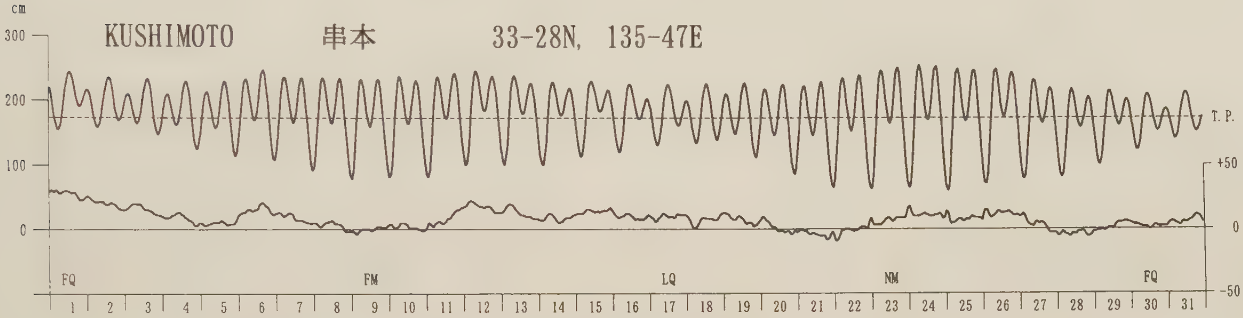

第15図 沿岸潮位時系列図（2003年12月）

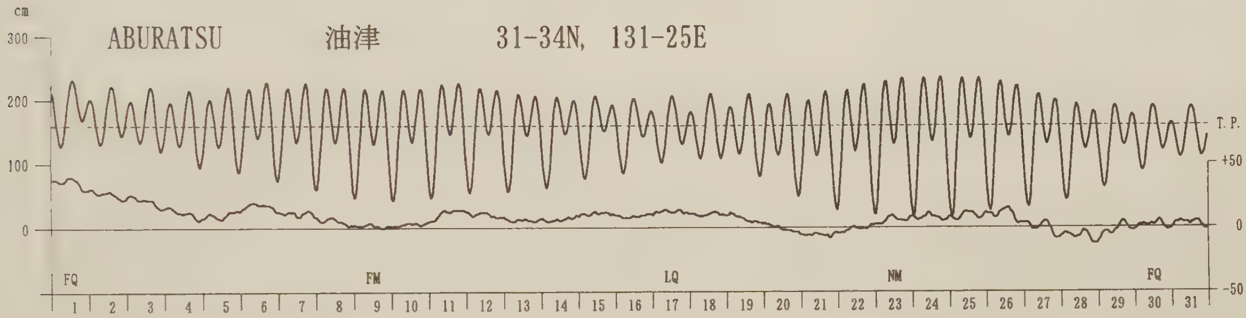
Fig. 15 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

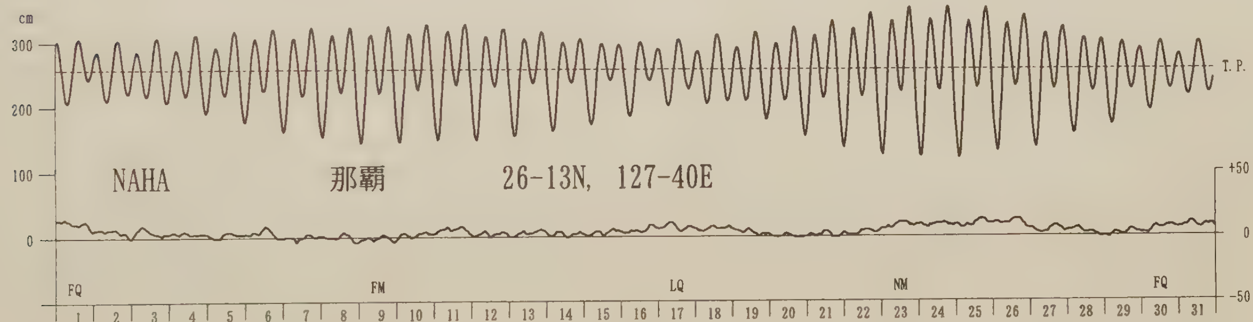
NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T. P. : Mean sea level of Tokyo Bay (Tokyo Peil)

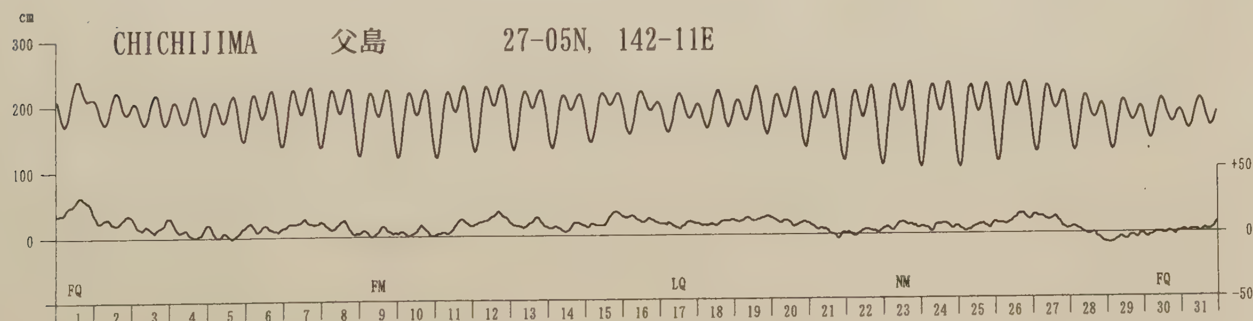
## Time series of Sea Level



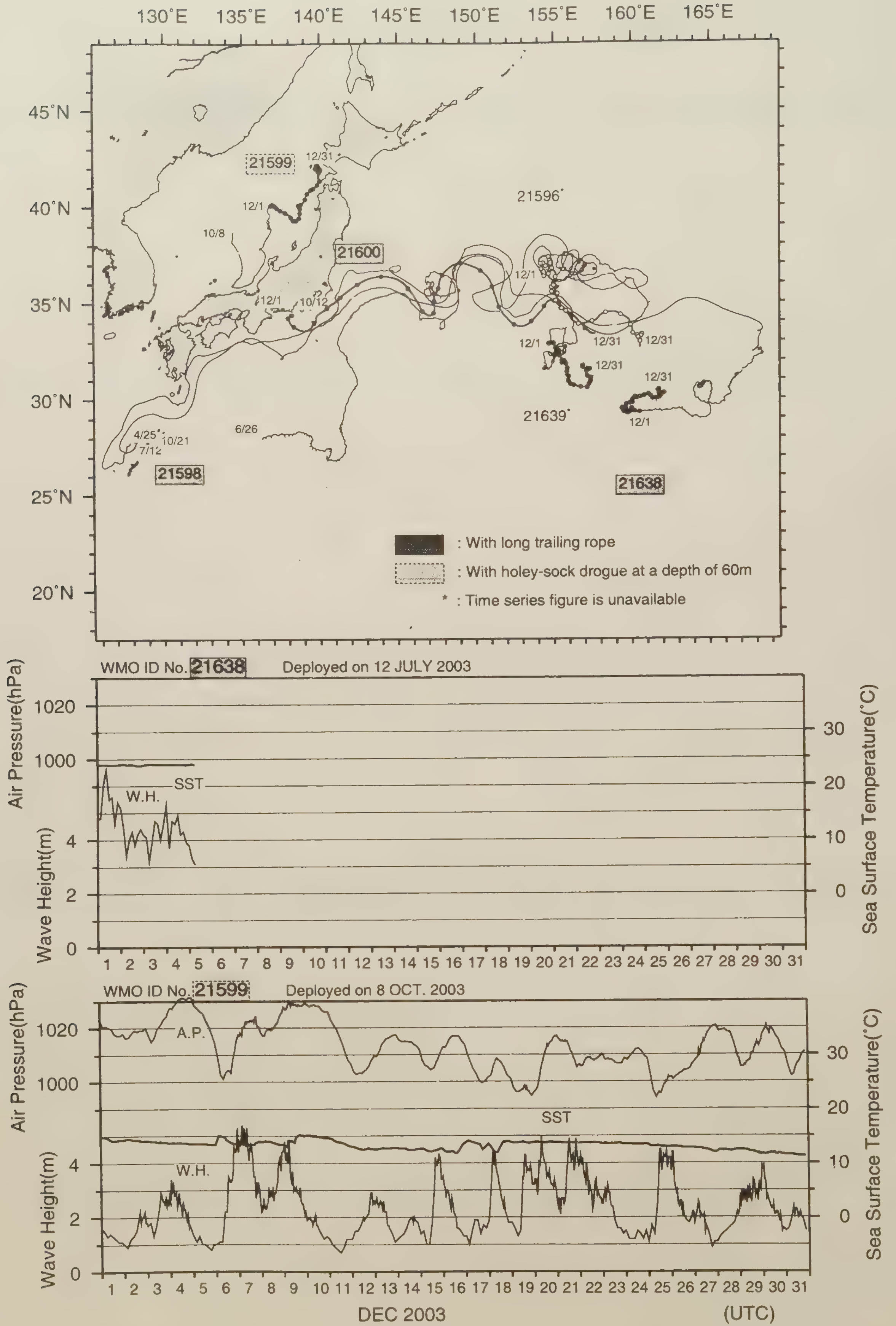



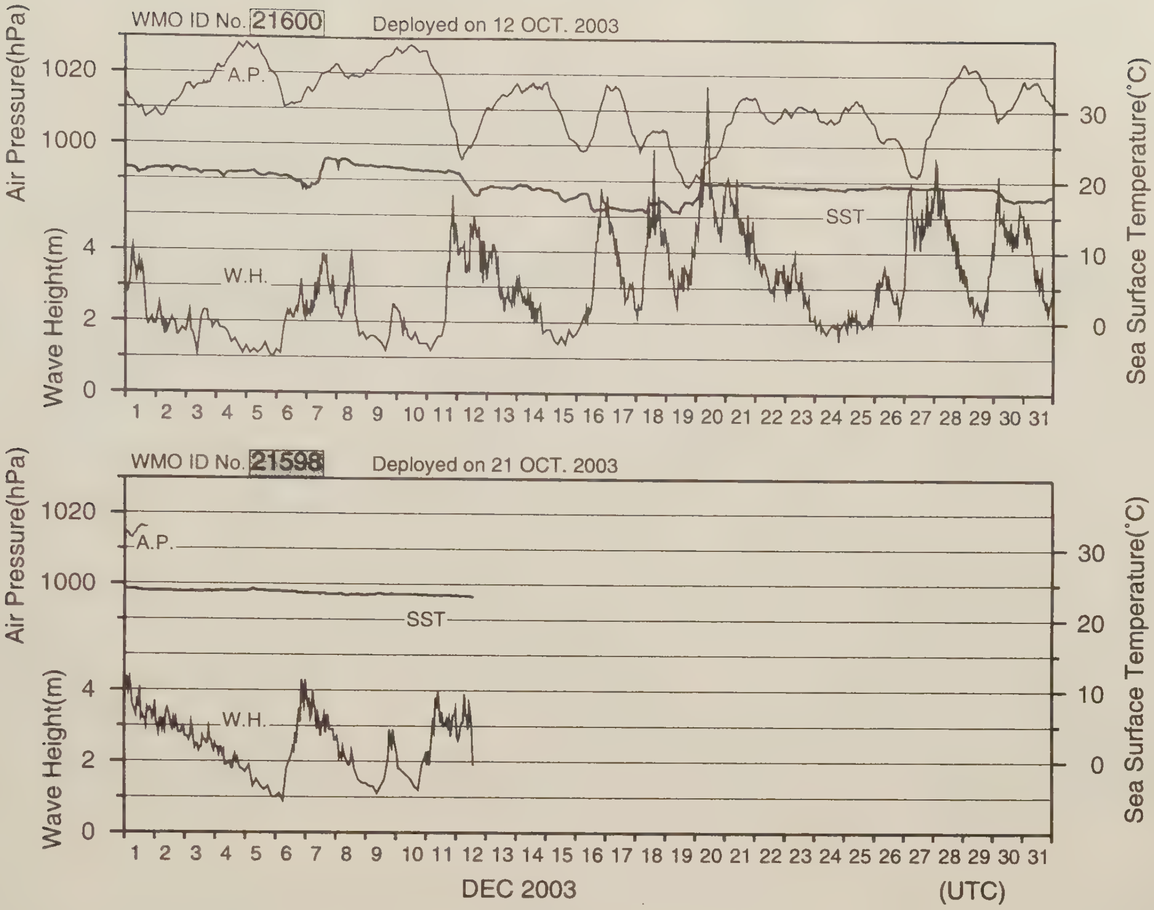

第15図 つづき

Fig. 15 continue



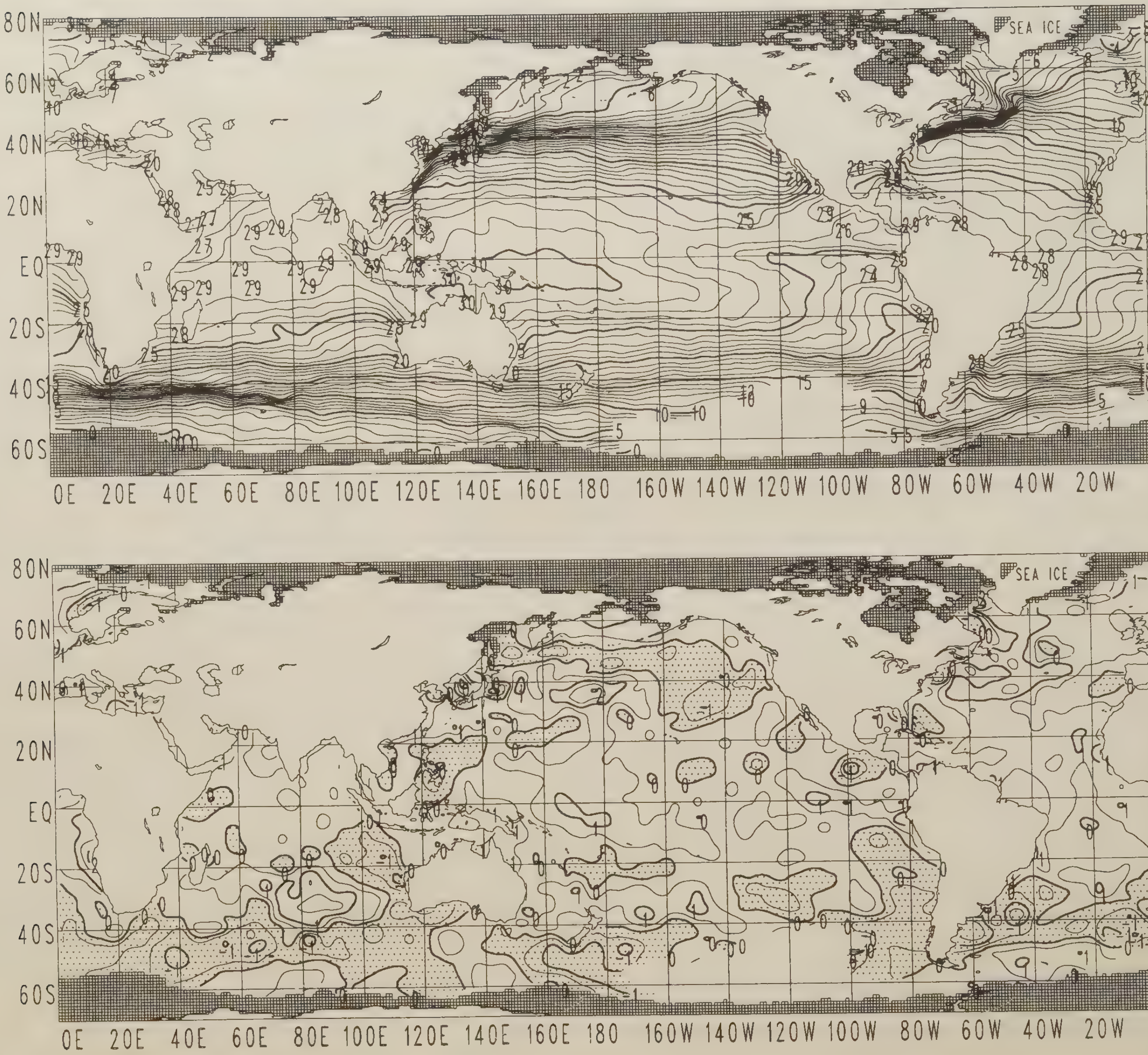

第16図　漂流型海洋気象ブイロボットの軌跡と観測要素の時系列図

Fig.16　Time series of JMA drifting buoy observation.
The upper panel shows paths of the buoys. Circles denote the position at 00h UTC everyday.
The lower panel shows time series of observation data.




第16図 つづき
Fig.16 continue

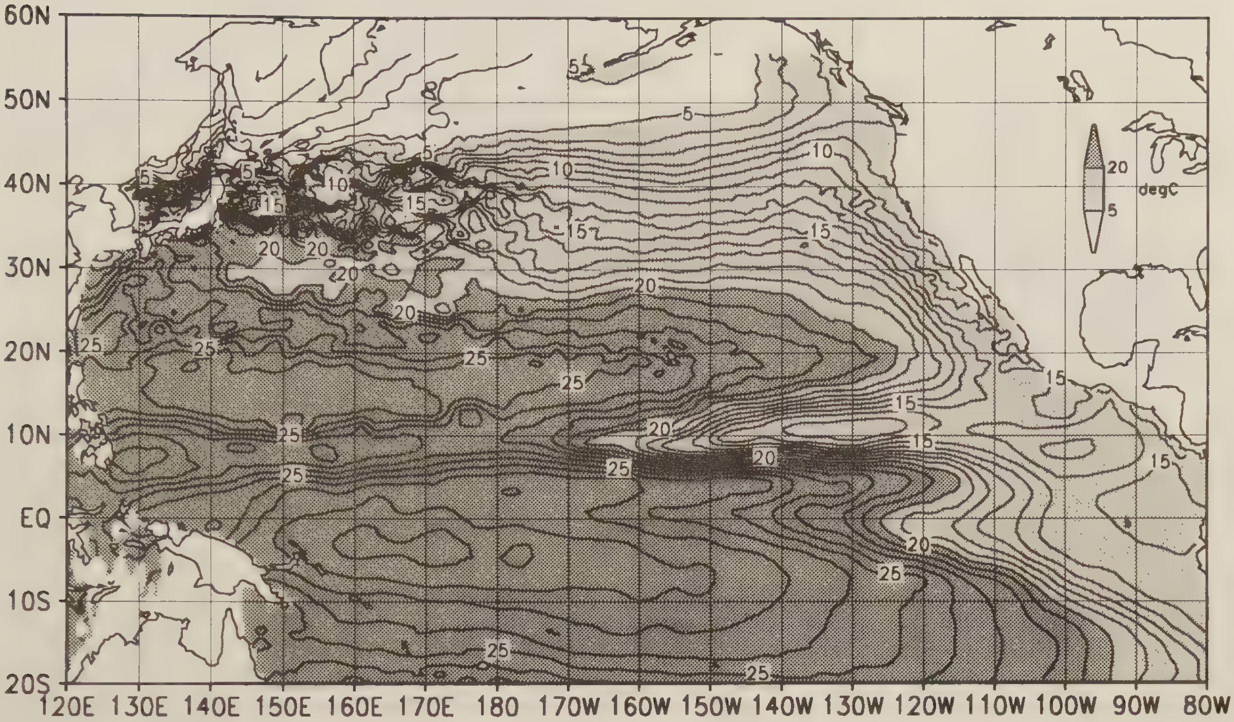
# SST & Anomalies in the Global Ocean




第17図　全球月平均海面水温図（上）及び偏差図（下）（2003年12月）

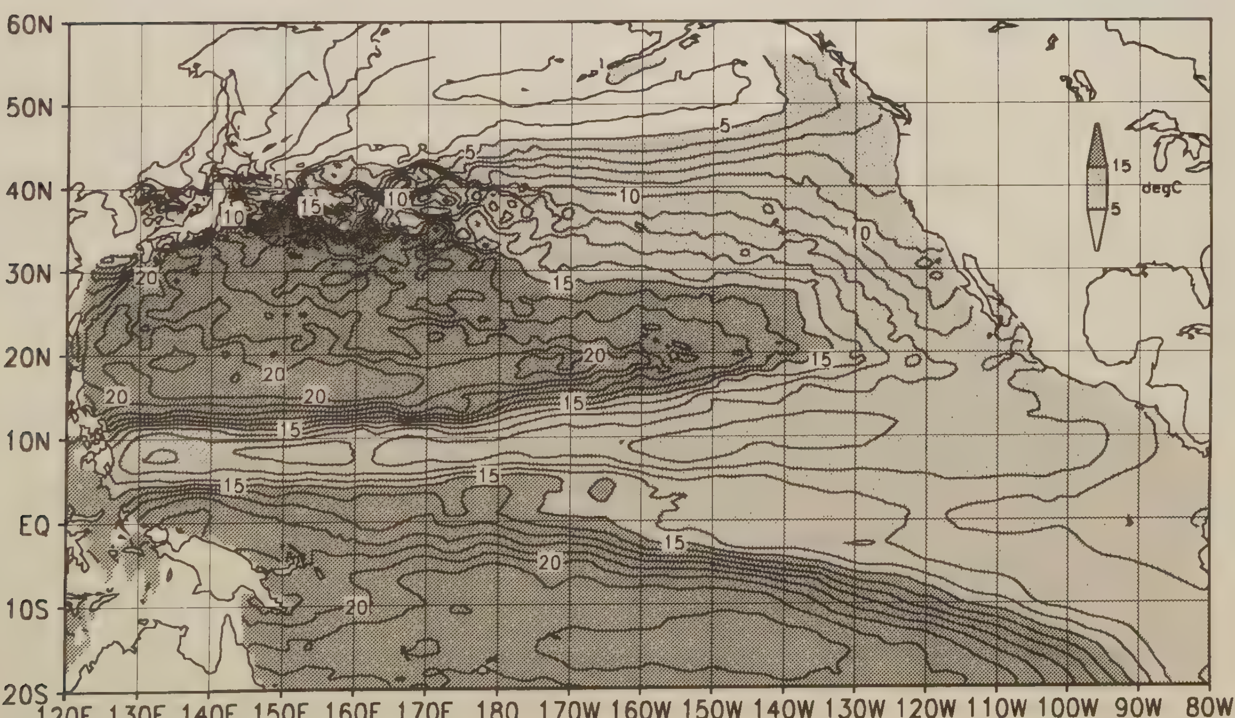
Fig. 17 Monthly mean SST over the global ocean (top) and anomalies (bottom) for December 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).

100m / 200m Temperature in the Pacific Ocean



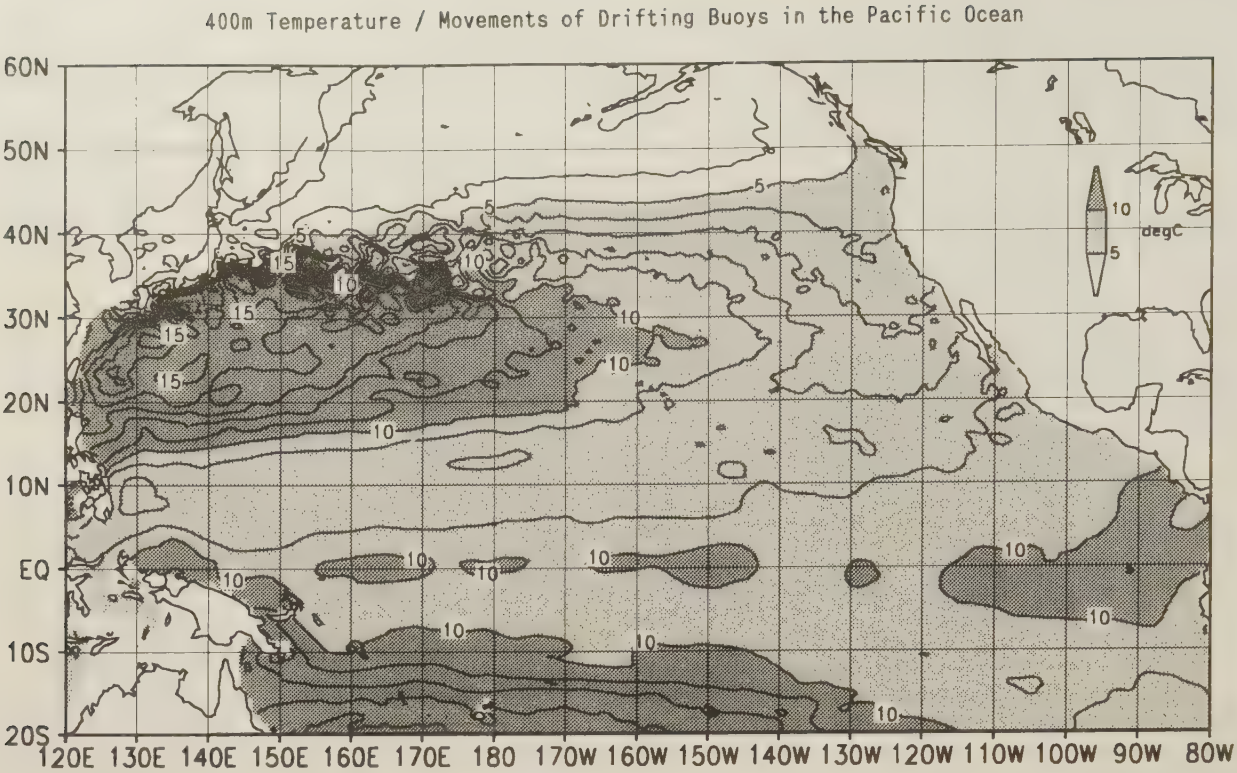

第 18 図　太平洋月平均表層水温図（深さ 100 m）　(2003 年 12 月)
（海洋総合解析システムによる）

Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for December 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)




第 19 図　太平洋月平均表層水温図（深さ 200 m）　(2003 年 12 月)
（海洋総合解析システムによる）

Fig. 19　Monthly mean subsurface (200 m) temperature in the Pacific Ocean for December 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



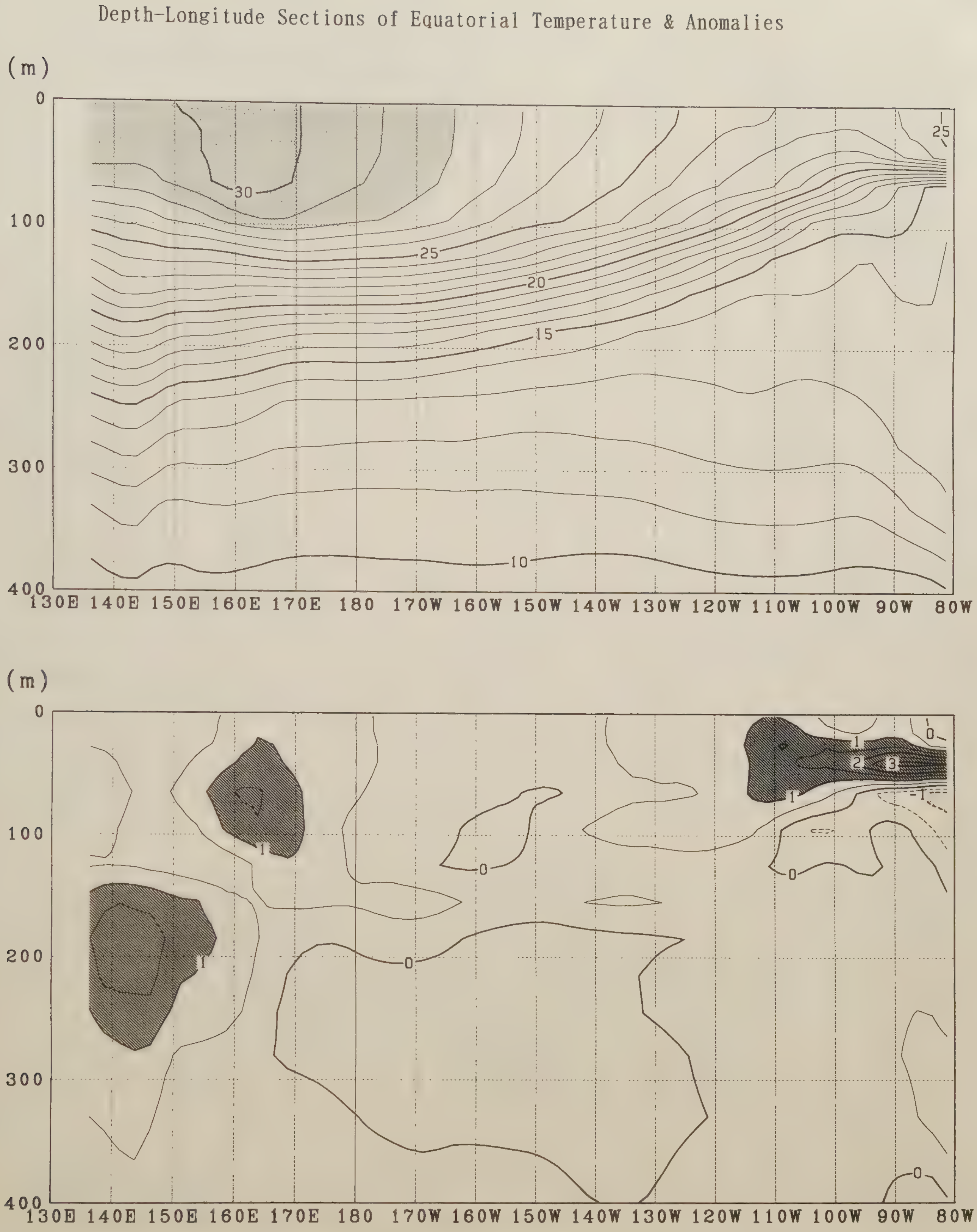

第 20 図　太平洋月平均表層水温図（深さ 400 m）（2003 年 12 月）
（海洋総合解析システムによる）

Fig. 20　Monthly mean subsurface (400 m) temperature in the Pacific Ocean for December 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)




第 21 図　太平洋ブイ流跡図（2003 年 12 月）

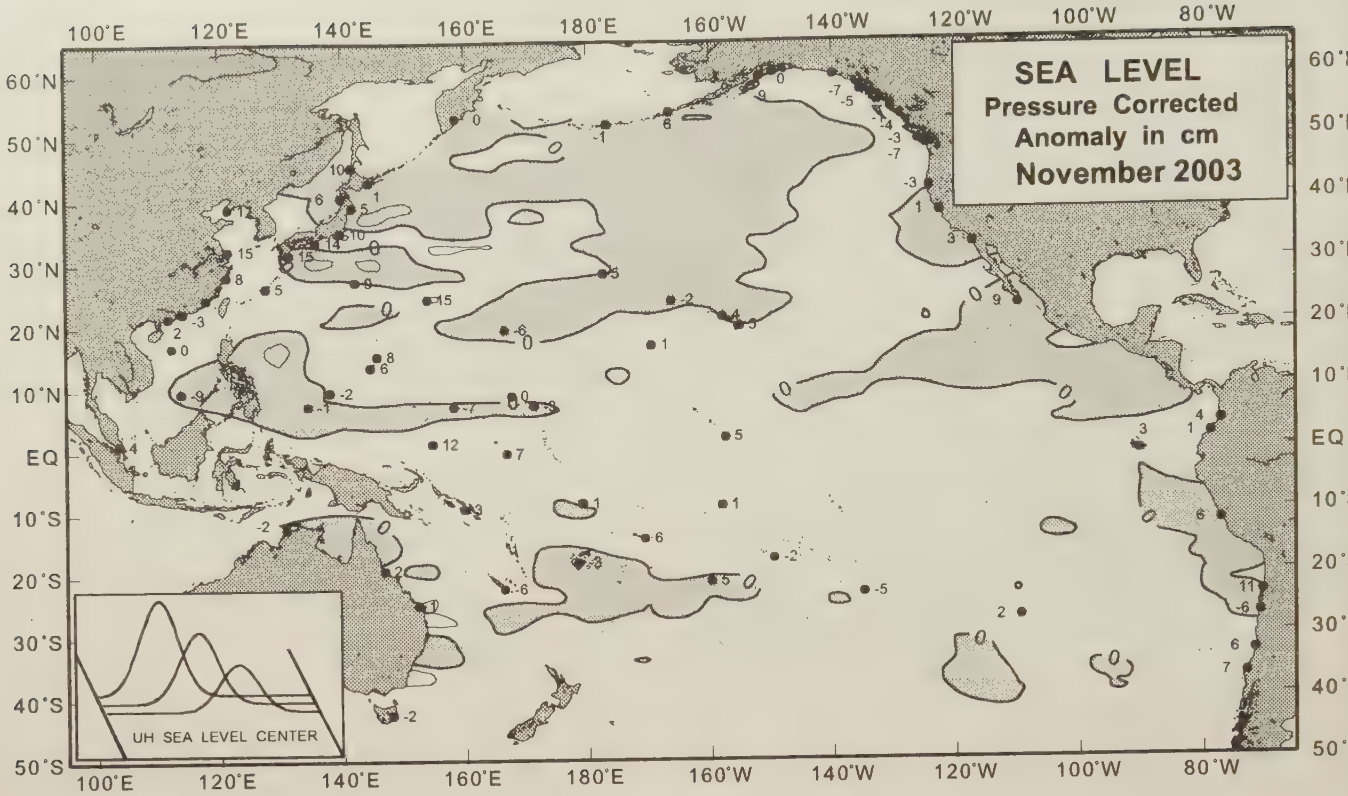
Fig. 21　Trajectories of drifting buoys in the Pacific Ocean during December 2003. Each track is for one buoy. Small circles represent the last positions for the month.




第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2003年12月）

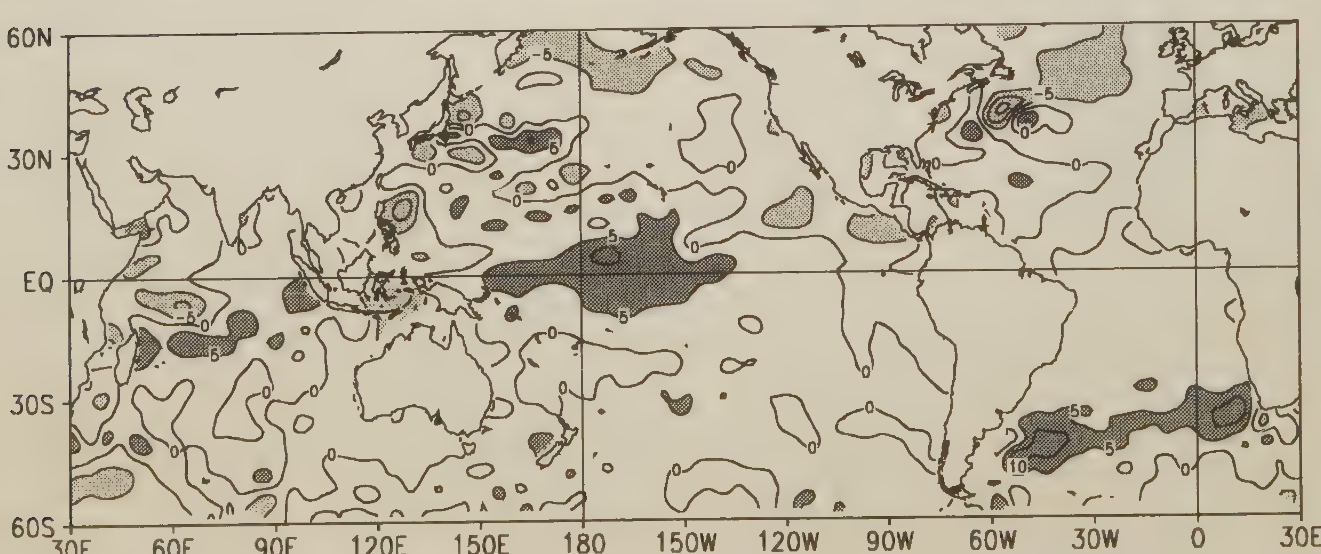
Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for December 2003. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2002 base period means.

Sea Level Anomalies / Sea Surface Height Anomalies




第 23 図　太平洋月平均海面水位偏差図（2003 年 11 月）

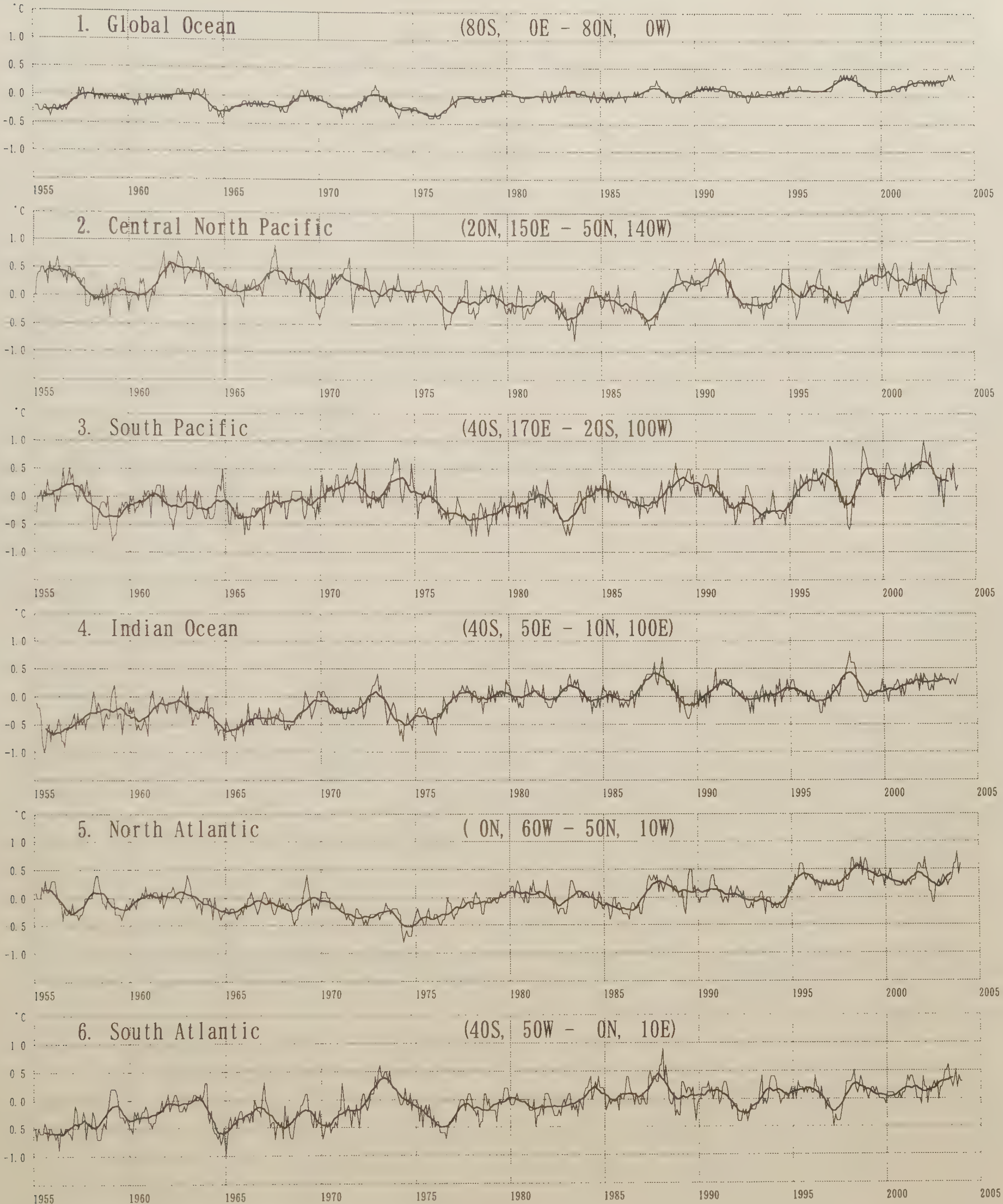
Fig. 23　Monthly sea level anomalies for November 2003 obtained from mean sea level (1993-2001) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.




第 24 図　全球月平均海面高度偏差図（2003 年 11 月）

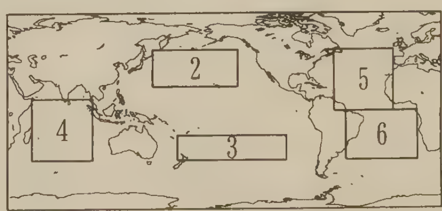
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of Jason-1 for November 2003. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

Long-term Variation of Monthly Mean SST Anomalies

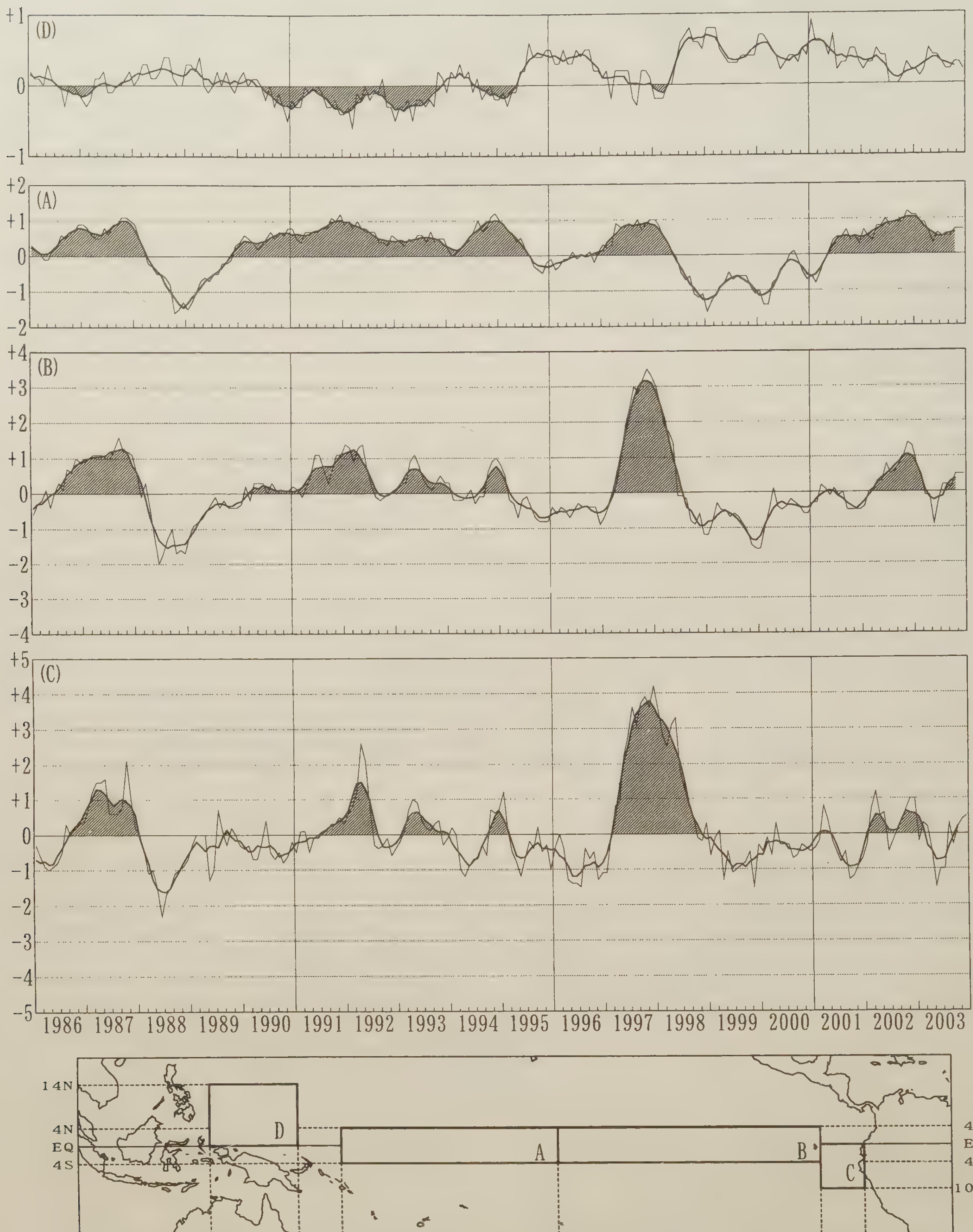



第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.



# Time Series of Tropical Pacific SST Anomalies




第26図　太平洋熱帯域の海面水温偏差時系列図

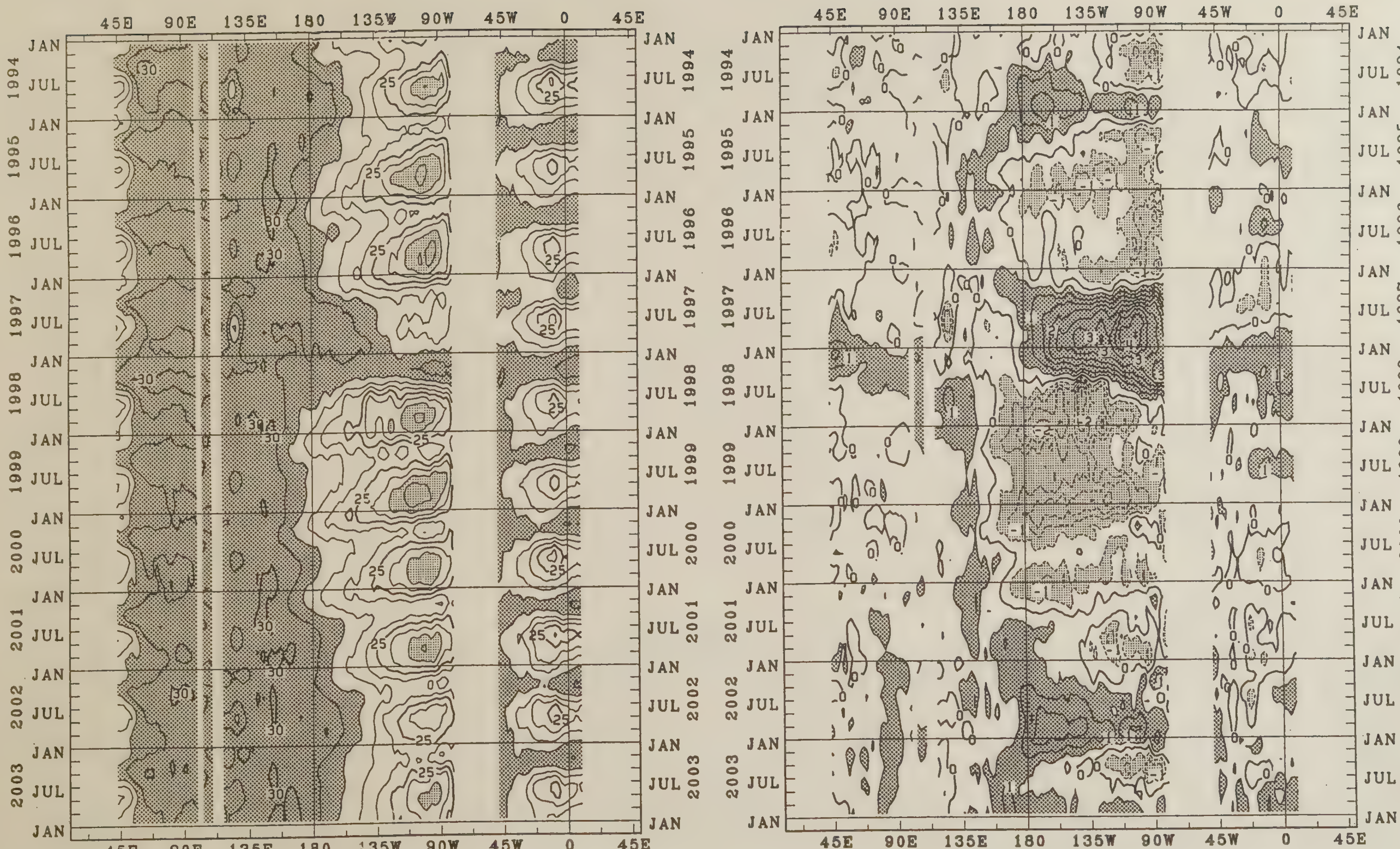
Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel.
Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1971-2000).

## Monitoring Indices in the Tropical Pacific

| MONTH YEAR | SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E | | REGION A 4N-4S 160E-150W | | REGION B 4N-4S 150W-90W | | REGION C EQ-10S 90W-80W | | SOI | SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W | DARWIN 12-24S 130-52E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| JAN 01 | 29.4 | 0.9 | 27.4 | -0.6 | 25.1 | -0.3 | 24.1 | -0.4 | 0.8 | 2.5 | 0.6 |
| FEB 01 | 28.9 | 0.6 | 27.2 | -0.8 | 26.0 | -0.3 | 25.8 | -0.2 | 1.0 | -0.4 | -3.2 |
| MAR 01 | 29.1 | 0.6 | 27.6 | -0.5 | 27.3 | 0.2 | 27.1 | 0.8 | 0.8 | 1.3 | -0.2 |
| APR 01 | 29.4 | 0.6 | 28.0 | -0.2 | 27.3 | 0.1 | 25.8 | 0.4 | 0.1 | -0.1 | -0.3 |
| MAY 01 | 29.7 | 0.4 | 28.7 | 0.1 | 26.8 | -0.1 | 24.1 | -0.2 | -0.7 | -0.2 | 0.9 |
| JUN 01 | 30.1 | 0.7 | 28.9 | 0.4 | 26.3 | 0.1 | 22.4 | -0.5 | 0.2 | -0.2 | -0.5 |
| JUL 01 | 29.5 | 0.2 | 29.0 | 0.5 | 25.3 | -0.1 | 21.1 | -0.8 | -0.2 | -0.1 | 0.3 |
| AUG 01 | 29.5 | 0.3 | 28.9 | 0.5 | 24.7 | 0.0 | 20.4 | -0.5 | -0.7 | -0.9 | 0.1 |
| SEP 01 | 29.6 | 0.3 | 29.1 | 0.7 | 24.2 | -0.5 | 19.2 | -1.3 | 0.1 | -0.2 | -0.4 |
| OCT 01 | 29.9 | 0.5 | 28.8 | 0.4 | 24.2 | -0.5 | 19.7 | -1.2 | -0.1 | -0.9 | -0.9 |
| NOV 01 | 29.8 | 0.5 | 28.9 | 0.5 | 24.2 | -0.5 | 20.9 | -0.9 | 0.6 | 0.7 | -0.4 |
| DEC 01 | 29.3 | 0.3 | 28.5 | 0.3 | 24.5 | -0.5 | 22.2 | -0.7 | -0.8 | -1.2 | 0.3 |
| JAN 02 | 28.7 | 0.2 | 28.7 | 0.7 | 25.0 | -0.4 | 24.2 | -0.3 | 0.3 | 1.3 | 0.7 |
| FEB 02 | 28.6 | 0.3 | 28.5 | 0.5 | 26.3 | 0.0 | 26.7 | 0.7 | 0.7 | 1.5 | -0.2 |
| MAR 02 | 28.8 | 0.3 | 28.5 | 0.4 | 27.2 | 0.1 | 27.5 | 1.2 | -0.2 | 0.4 | 1.0 |
| APR 02 | 29.3 | 0.5 | 29.0 | 0.8 | 27.5 | 0.3 | 25.9 | 0.5 | -0.1 | 0.1 | 0.3 |
| MAY 02 | 29.7 | 0.4 | 29.4 | 0.8 | 27.2 | 0.3 | 24.9 | 0.6 | -1.3 | -1.1 | 0.7 |
| JUN 02 | 29.8 | 0.4 | 29.5 | 1.0 | 27.0 | 0.8 | 22.4 | -0.5 | -0.4 | -0.2 | 0.4 |
| JUL 02 | 29.3 | 0.0 | 29.3 | 0.8 | 25.9 | 0.5 | 21.7 | -0.2 | -0.7 | 0.5 | 1.6 |
| AUG 02 | 29.2 | 0.0 | 29.3 | 0.9 | 25.3 | 0.6 | 21.0 | 0.1 | -1.2 | -1.4 | 0.5 |
| SEP 02 | 29.3 | 0.0 | 29.3 | 0.9 | 25.5 | 0.8 | 20.9 | 0.4 | -0.5 | -0.3 | 0.8 |
| OCT 02 | 29.5 | 0.1 | 29.3 | 0.9 | 25.7 | 1.0 | 21.6 | 0.7 | -0.5 | -1.0 | -0.3 |
| NOV 02 | 29.6 | 0.3 | 29.6 | 1.2 | 26.1 | 1.4 | 22.8 | 1.0 | -0.4 | 0.1 | 1.0 |
| DEC 02 | 29.2 | 0.2 | 29.3 | 1.1 | 26.3 | 1.3 | 23.9 | 1.0 | -1.0 | -0.1 | 1.7 |
| JAN 03 | 28.7 | 0.2 | 29.1 | 1.1 | 26.2 | 0.8 | 24.3 | -0.2 | -0.1 | -0.1 | 0.2 |
| FEB 03 | 28.4 | 0.1 | 28.9 | 0.9 | 26.8 | 0.5 | 26.3 | 0.3 | -0.5 | -1.5 | -0.2 |
| MAR 03 | 28.7 | 0.2 | 29.0 | 0.9 | 27.0 | -0.1 | 26.5 | 0.2 | -0.3 | -0.2 | 0.5 |
| APR 03 | 29.3 | 0.5 | 28.8 | 0.6 | 27.1 | -0.1 | 24.9 | -0.5 | -0.1 | 0.5 | 0.8 |
| MAY 03 | 29.7 | 0.4 | 28.9 | 0.3 | 26.0 | -0.9 | 22.8 | -1.5 | -0.6 | -0.7 | 0.2 |
| JUN 03 | 29.8 | 0.4 | 29.1 | 0.6 | 25.9 | -0.3 | 21.9 | -1.0 | -0.9 | -0.9 | 0.4 |
| JUL 03 | 29.6 | 0.3 | 29.0 | 0.5 | 25.6 | 0.2 | 20.9 | -1.0 | 0.2 | 0.7 | 0.3 |
| AUG 03 | 29.4 | 0.2 | 28.9 | 0.5 | 24.9 | 0.2 | 21.2 | 0.3 | 0.0 | -0.2 | -0.1 |
| SEP 03 | 29.5 | 0.2 | 28.9 | 0.5 | 24.8 | 0.1 | 20.2 | -0.3 | -0.1 | -0.3 | 0.0 |
| OCT 03 | 29.7 | 0.3 | 29.1 | 0.7 | 25.2 | 0.5 | 21.1 | 0.2 | -0.1 | -0.5 | -0.4 |
| NOV 03 | 29.6 | 0.3 | 29.1 | 0.7 | 25.2 | 0.5 | 22.2 | 0.4 | -0.2 | 0.0 | 0.4 |
| DEC 03 | 29.2 | 0.2 | 28.9 | 0.7 | 25.5 | 0.5 | 23.4 | 0.5 | 1.1 | 0.9 | -1.1 |

第1表　太平洋熱帯域の大気及び海洋の監視指数

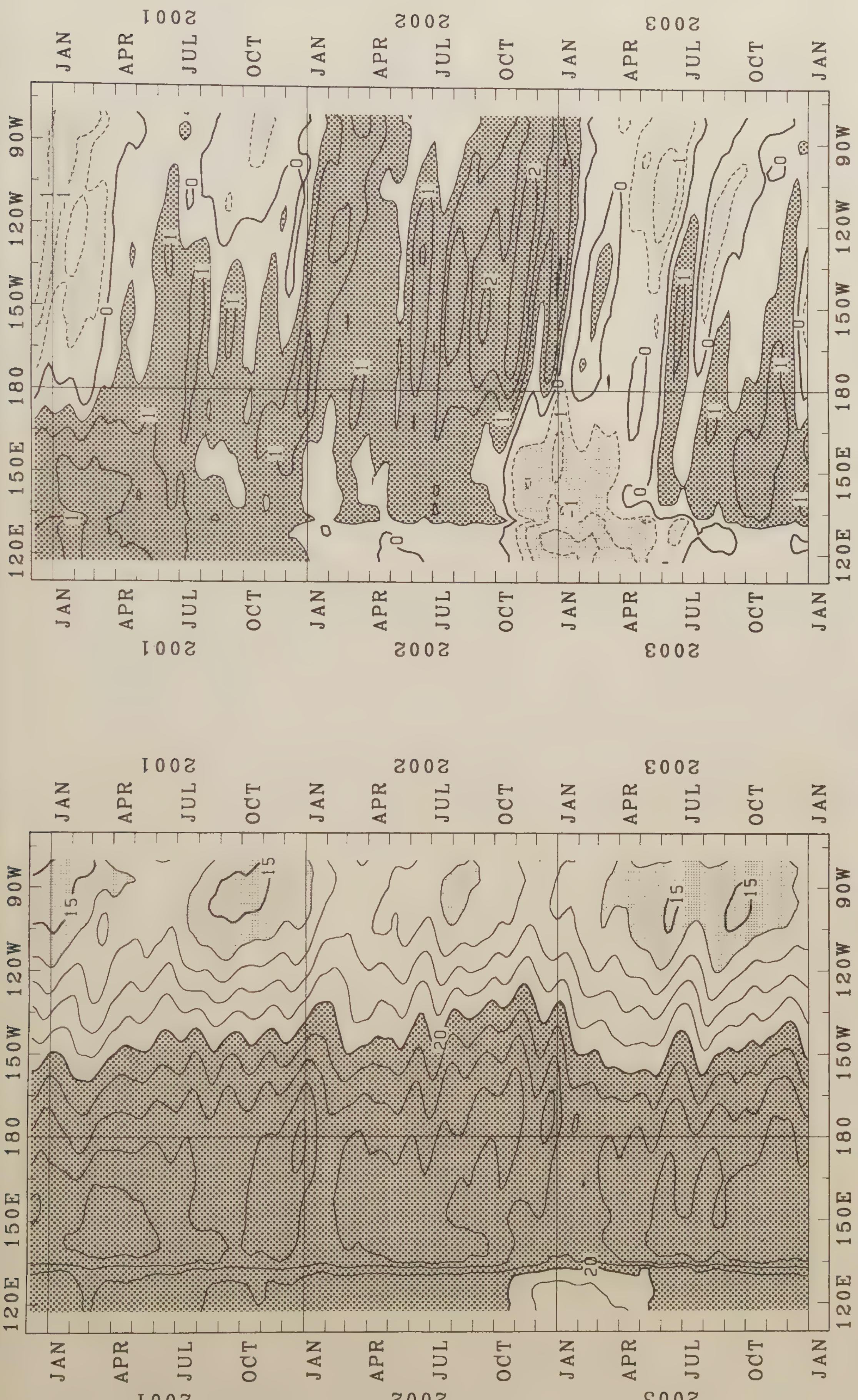
Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean




第 27 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

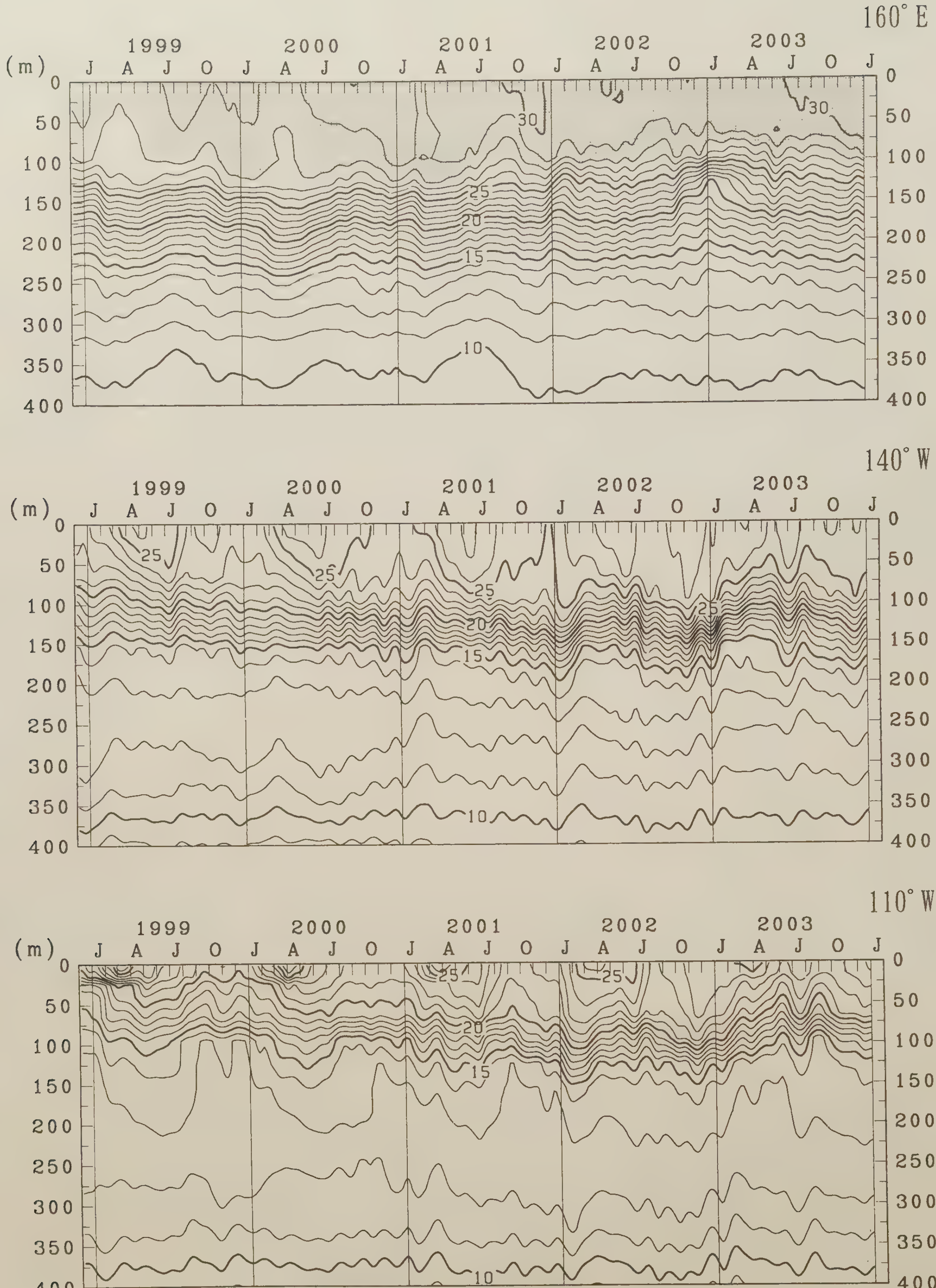
Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 ˚N-2 ˚S) in the global ocean. Contour interval is 1 ˚C (left) and 0.5 ˚C (right). Values greater than 28 ˚C (+0.5 ˚C) are shaded and values less than 23 ˚C (-0.5 ˚C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.

## Time-Longitude Sections of Ocean Heat Content & Anomalies (Eq.)




第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28 Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C (+0.5°C) are shaded and values less than 16°C (−0.5°C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2002 base period means.




第29図　太平洋赤道域の表層水温の時間－深度断面図

(上：西部、中：中部、下：東部)

Fig. 29  Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W).  Data are derived from the Ocean Data Assimilation System of JMA.  Contour interval is 1°C. Values greater than 28°C are shaded.

# Sea Ice

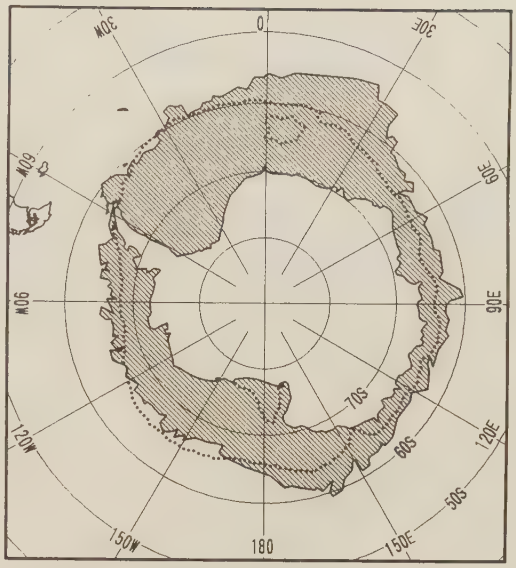



第30-1図　北極域の海氷図（2003年12月 8日）

Fig.30-1 Sea ice chart in the Arctic on 8 Dec. 2003.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).

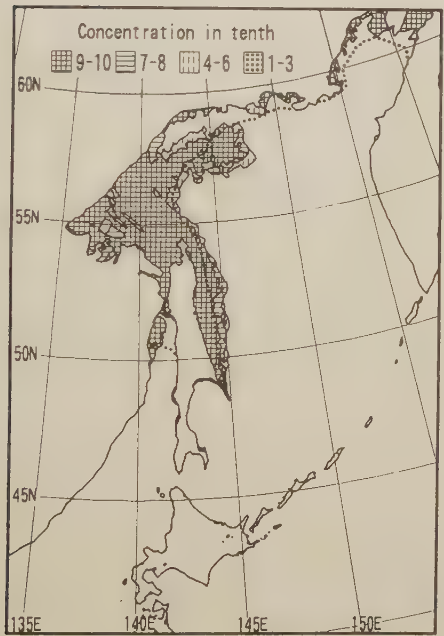



第30-2図　南極域の海氷図（2003年12月 8日）

Fig.30-2 Sea ice chart in the Antarctic on 8 Dec. 2003.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

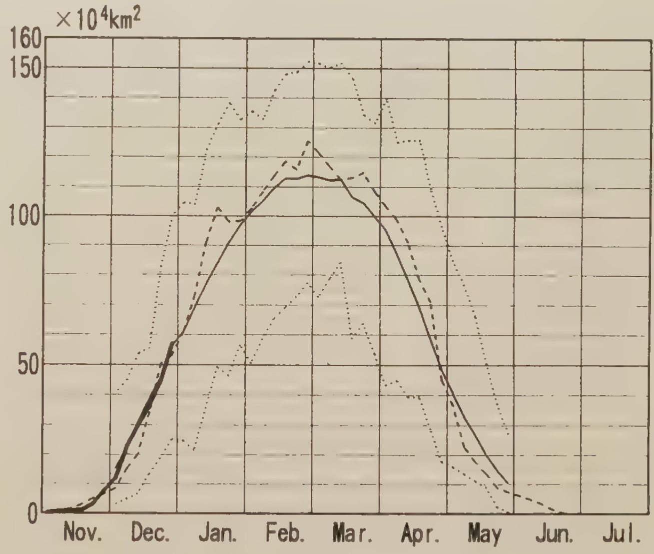
The data source is the National Ice Center (USA).




第30-3図 オホーツク海の海氷図（2003年12月15日）

Fig.30-3 Sea ice chart in the Sea of Okhotsk on 15 Dec. 2003.

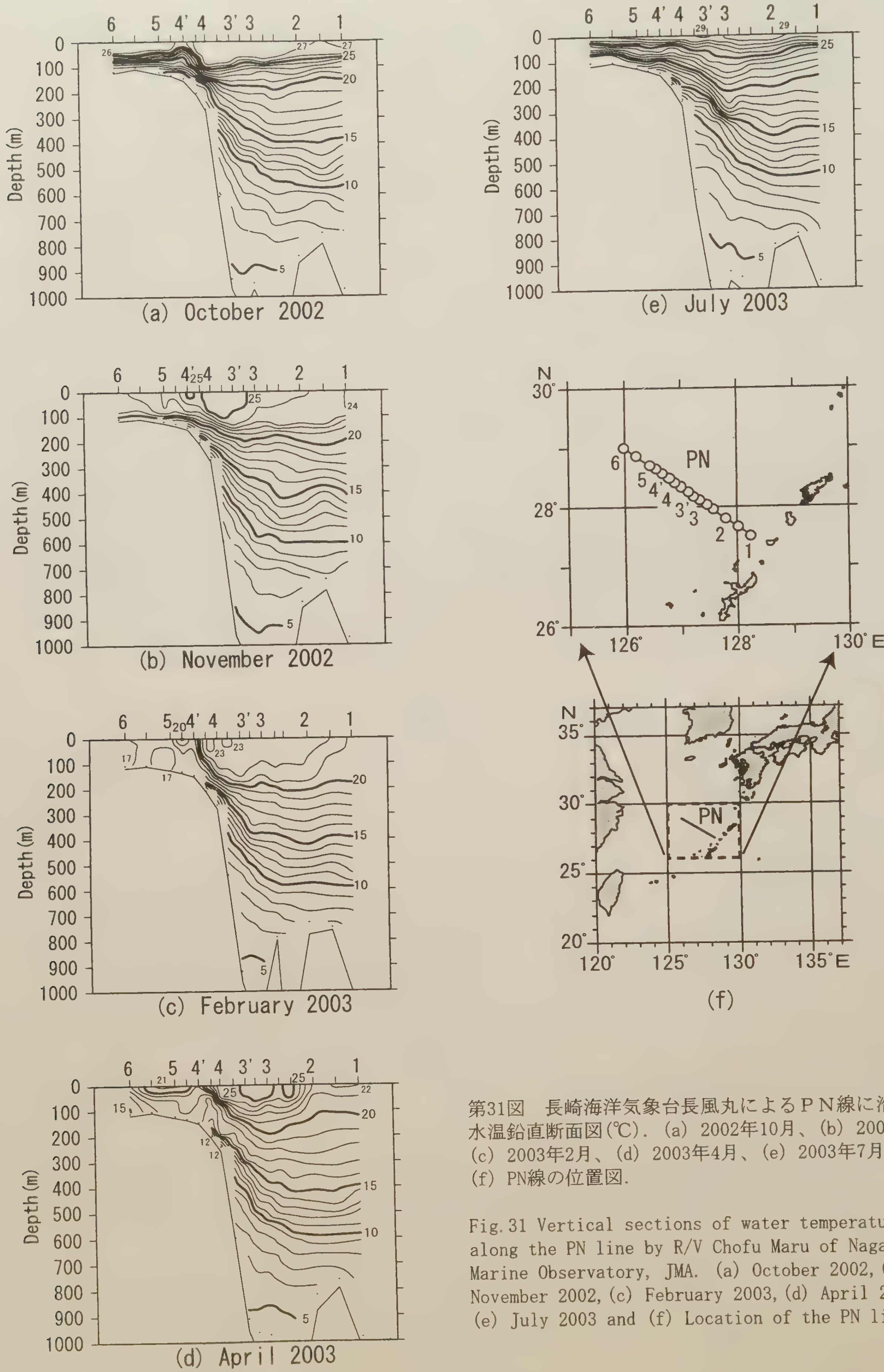
The dotted line denotes the mean ice edge averaged for the period from 1971 through 2000.




第30-4図 オホーツク海の海氷域面積

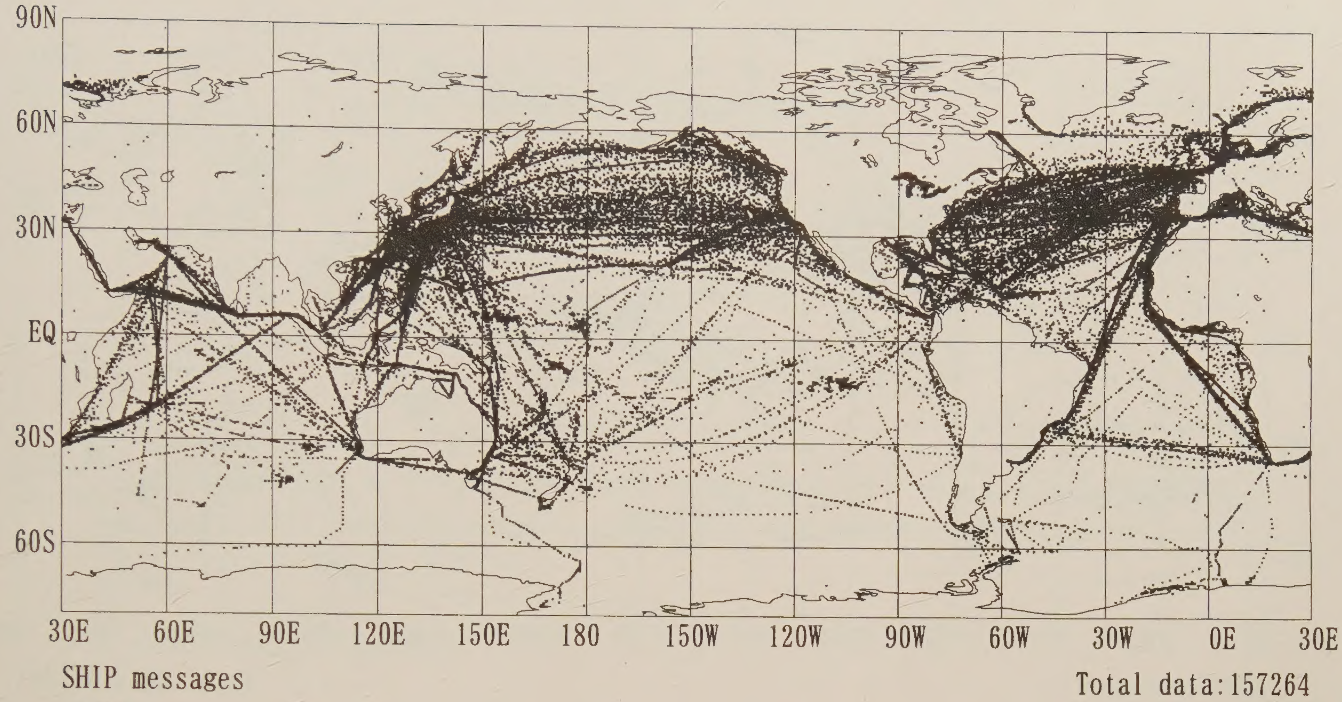
Fig.30-4 Time series of 5-day sea ice area in the Sea of Okhotsk.

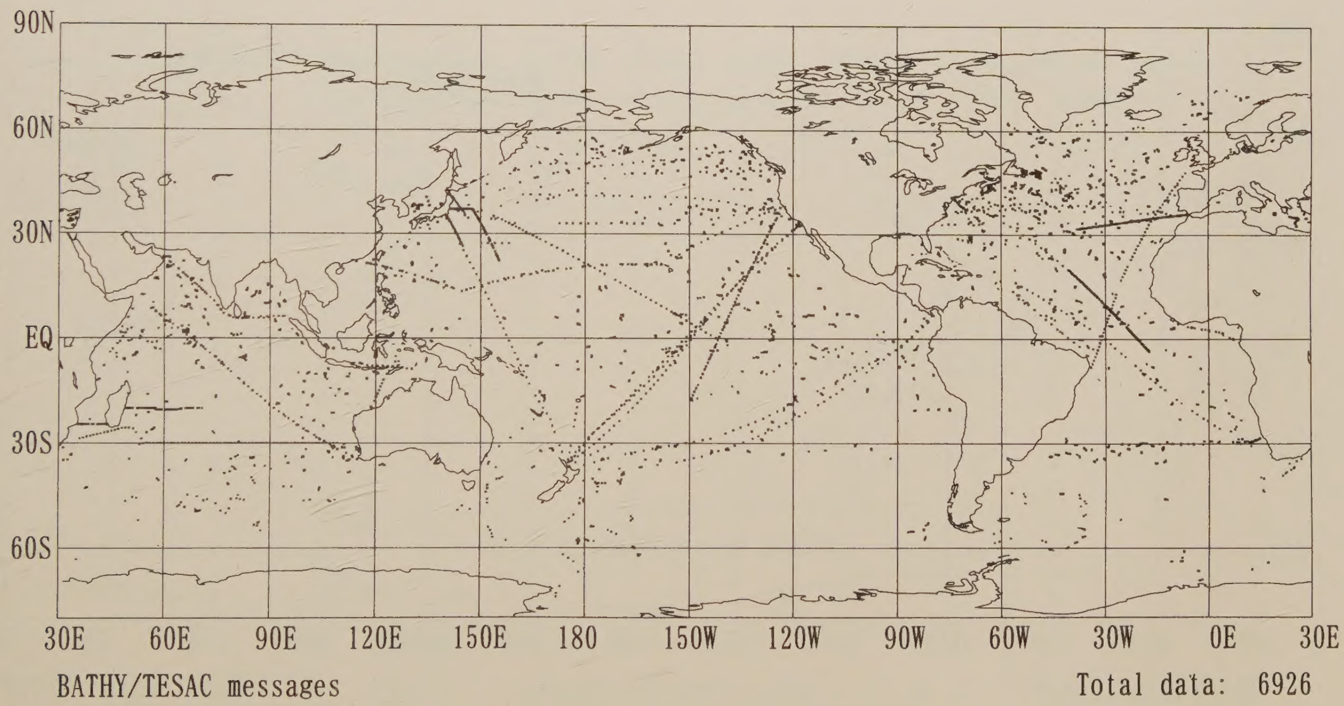
- ——— : current season (2003/2004)
- ——— : mean extent (1971–2000)
- ········ : maximum or minimum extent (1971–2003)
- - - - - : last season (2002/2003)




第31図　長崎海洋気象台長風丸によるＰＮ線に沿った水温鉛直断面図(℃). (a) 2002年10月、(b) 2002年11月、(c) 2003年2月、(d) 2003年4月、(e) 2003年7月、(f) PN線の位置図.

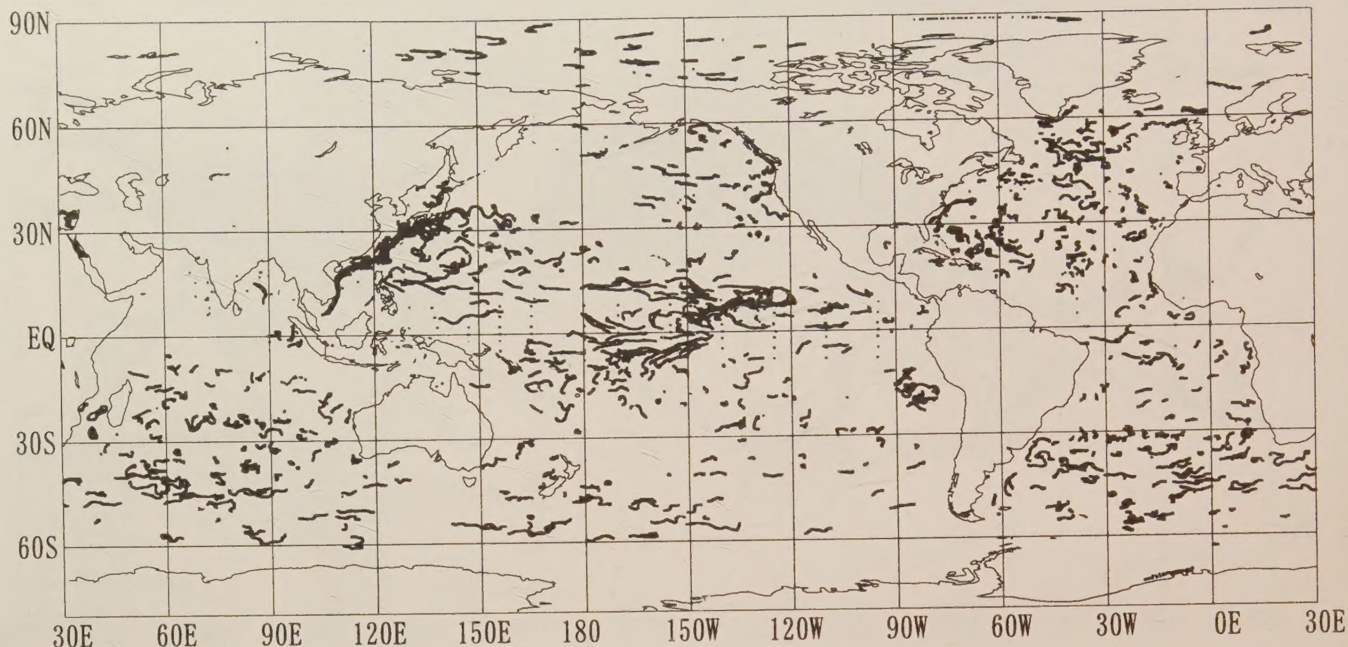
Fig.31 Vertical sections of water temperature(℃) along the PN line by R/V Chofu Maru of Nagasaki Marine Observatory, JMA. (a) October 2002, (b) November 2002, (c) February 2003, (d) April 2003, (e) July 2003 and (f) Location of the PN line.



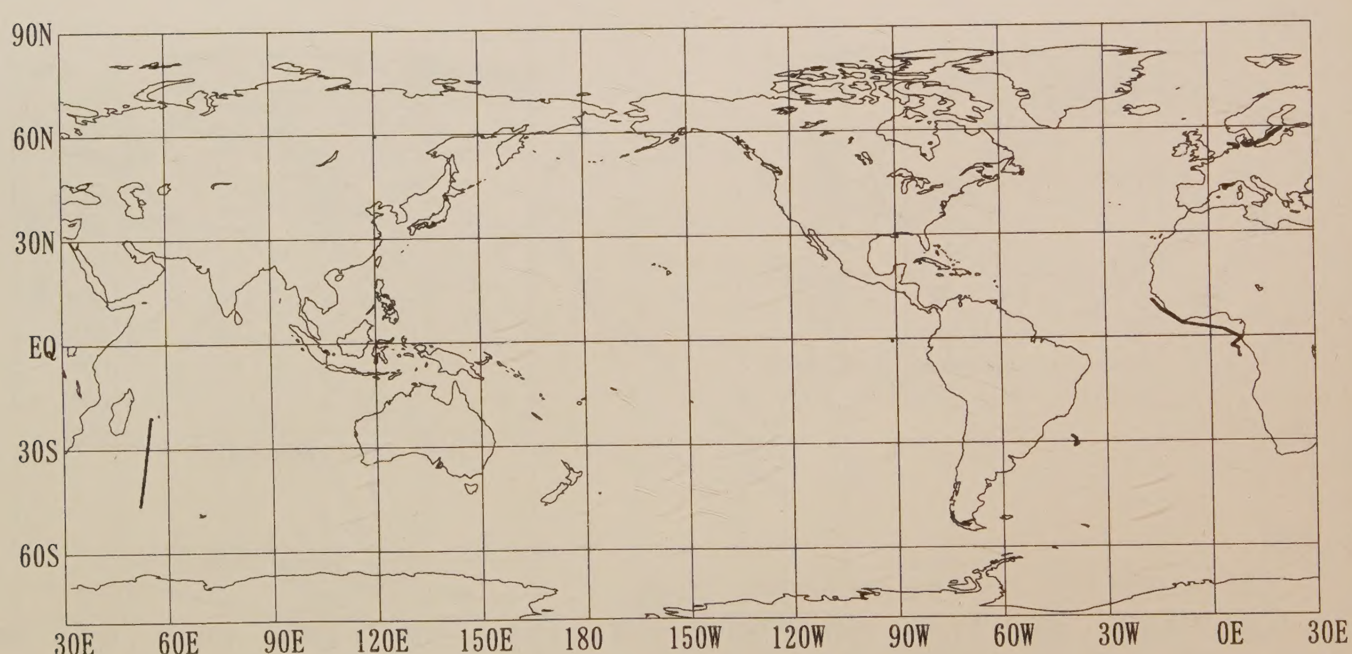

第32-1図　測点分布図(2003年12月)

Fig. 32-1　Geographical distribution of SHIP messages (top) and BATHY/TESAC messages (bottom) for December 2003.




BUOY messages

Total data:443401




TRACKOB messages

Total data: 8079

第32-2図　測点分布図(2003年12月)

Fig. 32-2 Geographical distribution of BUOY messages (top) and TRACKOB messages (bottom) for December 2003.

# 気 象 庁 海 洋 月 報

## Monthly Ocean Report

## December 2003 (No. 132)

本月報掲載の2003年12月のプロダクトには、気象庁が観測したデータ及びGTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

水産試験場等（北海道、青森県、岩手県、宮城県、山形県、福島県、茨城県、東京都、富山県、石川県、静岡県、愛知県、和歌山県、鳥取県、高知県、佐賀県、宮崎県）

（順不同）

平成１６年１月２０日発行

編集兼 気　象　庁
発行者 東京都千代田区大手町１－３－４

印刷所 有限会社　進英プリント
東京都渋谷区代々木 1-38-19